

**FACTORS AFFECTING COMPLIANCE OF MOTHERS/CAREGIVERS OF  
MALNOURISHED CHILDREN AGED 6-59 MONTHS TO AN OUTPATIENT  
NUTRITION SUPPORT PROGRAMME IN PIETERMARITZBURG, KWAZULU-  
NATAL**

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## ABSTRACT

### *Background*

Malnutrition continues to be a major public health problem in Africa, yet the compliance to the IMAM, a treatment protocol that began in KwaZulu-Natal and viewed as a highly efficacious approach to treat malnutrition, is very low. The Dietetics outpatient department at a regional hospital in Pietermaritzburg, KwaZulu-Natal, where the study was conducted, has about 375 children enrolled in the outpatient nutrition programme. The outpatient nutrition programme enables patients with stable Severe Acute Malnutrition and Moderate Acute Malnutrition to access nutritional supplements and to manage malnutrition outside the hospital. It is estimated that about 124 children between the age of 6 to 59 months default from the outpatient nutrition programme annually, accounting for a defaulter rate of 33%.

### *Aims and Objectives*

The aim of this study was to identify the factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal. The specific objectives of the study were: (1) To identify socio-demographic factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal; (2) To identify psychosocial factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal; (3) To identify if knowledge regarding the OTP and NSP affect the compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal; and (4) To identify ways in which compliance with the programme can be improved.

## ***Study Design***

A cross-sectional study design was used for this quantitative study. A structured questionnaire was used to conduct interviews with a random sample of 200 mothers/caregivers of malnourished children aged 6-59 months who attended an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal. A random sample technique using a lottery method, was used to identify compliant and non-compliant mothers /caregivers.

## ***Results***

Of the 200 participants, 9.5% (n=19) did not know the purpose of the two programmes and why their children were on them. Four percent 4% (n=8) did not have good knowledge about the 2 programmes and 86.5% (n=173) had good knowledge about the 2 programmes. (Good knowledge referred to the participants' understanding of the programme, and why their children were on it). Most of the participants 86.5% (n=173) felt that the programmes had improved their child's weight gain.

With regard to access, 53% (n=106) indicated that it was not easy to collect the supplements, and 20.5% (n=41) complained of the travelling distance. Forty percent (n=80) had no reason for defaulting, and 13.0% (n=26) had other reasons which were: the mother being unavailable due to registration for study at college, being out of town, scared of COVID and COVID regulations made it difficult; one of the other children was sick, did not know the child was attending OTP/NSP (in the case where child moved from one caregiver to another), and other family related problems. There was no statistically significant relationship between mother/caregiver's marital status and factors preventing them to collect OTP and NSP supplements.

## ***Conclusion***

The study concluded that the caregiver or mother's knowledge of the programme and its importance is crucial in preventing defaulting and non-compliance. The study also highlighted the need to train community health workers and to integrate them into the national health system.

## DECLARATION

I hereby declare that the work contained in this dissertation entitled *Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal*, is my original work and that it has not previously in its entirety or in part been submitted at any university. I declare that all source of information used in the writing of this thesis has been referenced.



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**Likhabiso Makhaye**

**10 September 2021**

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**Signature**



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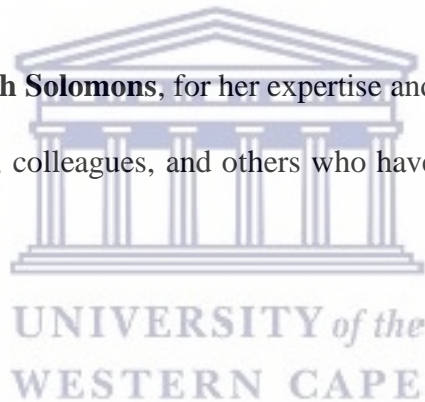
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## ABBREVIATIONS

CMAM	Community-based Management of Malnutrition		
EMM	Enriched maize meal		
GMP	Growth Monitoring Programme		
HAZ	Height-for-age z-score		
IMAM	Integrated Management of Acute Malnutrition		
IMCI	Integrated Management of Childhood illnesses		
INP	Integrated Nutrition Programme		
LAZ	Length-for-age z-score		
LFM	Lactose-free powdered milk		
MAM	Moderate Acute Malnutrition		
MUAC	Mid-Upper Arm Circumference		
NCP	Nutrition Care Plan		
NSP	Nutrition Supplementation Programme		
PH	Public Health		
OTP	Outpatient Therapeutic Programme		
RUTF	Ready-to-Use Therapeutic Food		
SAM	Severe Acute Malnutrition		
SSA	Sub-Saharan Africa	UW	Underweight
WAZ	Under-weight-age z-score		
WHZ	Weight-for-Height z-score		

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## CHAPTER ONE: INTRODUCTION

### 1.1 BACKGROUND

Malnutrition which is most often referred to as undernutrition among children under 5 years of age, is a major Public Health (PH) problem throughout the developing world (UNICEF, 2015:30-31). It has become a major global challenge, which led to the estimation that the number of children treated for severe acute malnutrition (SAM) worldwide could be 2.6 million (Haddad et al. 2014). According to Black et al. (2013) undernutrition which includes: foetal growth restriction, suboptimum breastfeeding, stunting, wasting and vitamin A and zinc deficiency, is attributed to 45% of child deaths translating to 3.1 million deaths annually. Acute malnutrition is not only an important cause of childhood morbidity and mortality but leads to permanent impairment of physical and mental growth (Haddad et al. 2014).

According to the estimates by Black et al. (2013), globally 165 million children younger than 5 years were stunted (height-for-age z-score [HAZ] of -2 or lower) in 2011. Additionally, 100 million children younger than 5 years were underweight (under-weight-age z-score [WAZ] < -2), 52 million were wasted (weight-for-height z-scores (WHZ) < -2) globally in 2011 (Black *et al.* 2013). Furthermore, in 2011, approximately two-thirds of all wasted children lived in Asia and almost a third in Africa, with similar proportions for severely wasted children (Black *et al.* 2013).

Undernutrition results from continuous inadequate food intake to meet energy requirements, poor absorption, or excessive loss of nutrients, thus resulting in loss of body weight (Akparibo, Booth & Lee., 2017). According to Akparibo *et al.* (2017), there are several forms of undernutrition namely, acute malnutrition, nutritional oedema, wasting, stunting, and underweight, and micronutrient deficiencies. Acute malnutrition includes SAM, which is defined by the presence of nutritional oedema or very low weight for height (below -3SD scores of the median World Health Organisation (WHO) growth standards, and a Mid-Upper Arm Circumference < 11.5cm . And moderate acute malnutrition (MAM) which is defined by moderate wasting (Akparibo *et al.* 2017).

According to Brits *et al.* (2017), the focus of the management of acute malnutrition has recently shifted from a recuperative to a more preventive one. The community-based management of

malnutrition (CMAM) is known as the Integrated Management of Acute Malnutrition (IMAM) in Kwa-Zulu Natal (KZN) and is a combination of both in-patient and out-patient therapeutic feeding for the treatment of SAM and MAM (UNICEF, 2016:2; Brits et al. 2017; KZN-DOH 2018:22-44). The out-patient therapeutic component of the CMAM/IMAM approach of SAM and MAM involves timely detection of SAM and MAM in the community, and the provision of treatment for those without medical complications with ready-to-use therapeutic foods (RUTF), and other nutrient-dense foods at home. Hence, it is called the out-patient therapeutic program (OTP) (Brits et al. 2017). It has been said that CMAM could prevent the deaths of hundreds of thousands of children (Brits *et al.* 2017).

The CMAM approach has 4 key components namely: (1) community mobilization; (2) nutrition supplementation programme (NSP), (3) OTP, and (4) in-patient care (UNICEF, 2016:2). However, this study will focus on only two components namely OTP and NSP, which are collectively known as the outpatient nutrition programme (ONP) according to KZN-IMAM guidelines. The OTP provides RUTF and routine treatment using simple medical protocols for children with SAM and MAM (UNICEF, 2016:2; KZN-DOH, 2018:44). The NSP involves the provision of dry take-home rations such as enriched maize meal porridge (EMM) and ready-to-use therapeutic milk (RUTM) and routine basic treatment for families of children with SAM who have not experienced complications (UNICEF, 2016:2; KZN-DOH, 2018:44).

Once a child has been admitted to the OTP and NSP at the regional hospital at Pietermaritzburg (PMB), the caregivers and mothers are provided with RUTF, EMM, infant cereal, lactose-free powdered milk (LFM), and counselling (Appendix 2). In KZN, these nutritional supplements are provided on a monthly basis to children with SAM without complications or on discharge from hospital to be managed at the household level (KZN-DOH, 2018:48). The first visit to the health facility for check-ups and refilling of OTP and NSP supplements are usually scheduled for two weeks post-discharge from the inpatient malnutrition ward, and thereafter monthly visits are scheduled (KZN-DOH, 2018:49). According to KZN-DOH (2015:37) all children should remain on supplementation for a minimum of 2 months after recovery from the inpatient treatment to prevent relapses. However, all children should not remain on supplementation for more than 6 months. Additionally, if there is no improvement after 2 months on the OTP and NSP, an investigation into the failure to respond to treatment should be conducted (KZN-DOH, 2015:37).

## 1.2 RATIONALE FOR THE STUDY

The IMAM guidelines typically known as CMAM worldwide, are aimed at providing clear step-by-step actions for the management of SAM and MAM in both in-hospital and out-of-hospital settings. Additionally, the KZN-IMAM guidelines complement the existing national guidelines of SAM in South Africa (KZN-DOH,2014:6). These guidelines focus on the integration of the management of Sam and Mam into ongoing routine health services for children aged 6-59 months and acutely malnourished pregnant and lactating women (KZN, DOH2014:5-6). These guidelines are aimed at:

- Policy makers and programme managers responsible for developing policies and programmes for the management of children with acute malnutrition.
- Supervisors responsible for the monitoring and evaluation of the IMAM component.
- Medical staff, dietitians, nursing staff and health workers and those responsible for the management of children with acute malnutrition.
- As well as community health workers (CHWs) responsible for conducting community outreach activities, and in community health care services (KZN-DOH, 2014:5-8).

The CMAM programme is a highly effective approach for helping children admitted to hospital to recover from SAM and promoting prevention through community outreach and MAM rehabilitation (UNICEF, 2016:4). The outpatient management services of malnutrition, whether implemented through a health facility or mobile clinics are effective in CMAM intervention in treating SAM without complications (UNICEF, 2016:4). The rehabilitation phase, which is the last step, has advantages as the children have reduced exposure to hospital acquired infections (Kapil, 2015). In addition, it benefits the mother to reduce time in hospital, which may result in other children being neglected (Kapil, 2015). Kapil, (2015) also added that treating children with SAM in the rehabilitation phase in a hospital setting is not always desirable or practical and home treatment with monthly follow-up at the facility may be better. Some advantages experienced by mothers/caregivers during CMAM includes being able to look after other family responsibilities

simultaneously and receiving training on better feeding and care practices in their own setting (Kapil, 2015).

Ashworth's (2006) review of 33 studies found that CMAM was effective and improved the outcomes of children with SAM. He also concluded that if children have access to a functioning Primary Health-Care (PHC) system and can be monitored, the rehabilitation phase of treatment of SAM should take place in the community rather than in the hospital provided that caregivers can make energy- and protein-dense food mixtures or are given RUTF.

In their study, Malik *et al.* (2016) found that the use of home-based therapeutic foods was more effective than WHO/UNICEF recommended therapeutic foods for the management of SAM. They suggested that a possible reason for this was the ease of preparation, affordability and palatability of home-based therapeutic foods coupled with increased frequency of feeding. A retrospective cohort study by Yebyo *et al.* (2013) found that the recovery rate for their cohort was 61.7%, the default rate was 13.8%, mortality rate was 3%, and the average weight gain was 5.23 g/kg/day. Yebyo *et al.* (2013) also reported a below minimum (<75%) recovery rate of SAM children in their study and attributed the cause to poor capacity of OTP service providers. It was also indicated that as a child consume more than one sachet of RUTF per day during the outpatient programme, the recovery rate from SAM increased by 4%. Additionally, the review also revealed that within the program, 44.3% of children were found to have at least one medical problem, thus with outpatient management, only 34% of these children with medical problems recovered, while 94% of children without medical problems recovered during outpatient care. Another study that was conducted in Bloemfontein, found that 80.7% of children who attended an integrated nutrition programme (INP) regularly, benefited from the programme but that the follow-up of the children, as well as the monitoring and implementation of the INP, was however inadequate (Brits *et al.* 2017).

### **1.3 PROBLEM STATEMENT**

The KZN IMAM guidelines have been structured to strengthen nutrition in children between 0-59 months old (KZN-DOH, 2018:21). Efforts have been directed to protecting and supporting children with SAM and MAM at the community level (KZN-DOH, 2018:58). This has resulted

in much progress being made in promoting breastfeeding, as well as the provision of health education when starting complementary feeding. However, despite the impressive efforts, compliance with OTP and NSP is still poor at the proposed study site.

The study site's statistics for 2016 to 2019 showed a default rate of 33% for OTP and NSP, which was the highest for the uMgungundlovu district. The hospital's statistics also showed that only 6.4% of the 375 children aged 6-59 months old who started on the NSP and OTP between 2016 and 2019, completed the entire program without defaulting their follow-updates. The poor compliance towards the OTP and NSP among mothers/caregivers of children aged 6-59 months old, has played a pivotal role in a higher prevalence of hospital re-admissions for malnutrition at the study site and similar settings in the uMgungundlovu district.

For the purpose of this study, non-compliance was defined as not adhering to appointment dates on monthly basis. Mothers/caregivers are usually given monthly follow-up appointment dates with specific time slots for consultation with dietitians, to collect the nutrition supplements, and for the child to undergo weight monitoring. Despite the interventions that have been put in place to promote good nutrition and encourage mothers to comply with the OTP and NSP, the compliance at the study site is still poor. This might be because the mothers/caregivers of these children do not understand the value of the nutrients in the nutritional supplements provided by OTP and NSP. They might also lack knowledge about the importance of these two programmes. Therefore, this study's aim was to assess the factors affecting compliance of mothers/caregivers of children aged 6-59 months old with SAM and MAM attending OTP and NSP at a regional hospital in PMB in KZN.

#### **1.4 RESEARCH QUESTIONS**

- What are the underlying factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal.
- Do psychosocial factors (such as knowledge and perceptions towards OTP and NSP) affect compliance of mothers/caregivers to the OTP and NSP?



- Do knowledge regarding the value OTP and NSP affect the compliance of mothers/caregivers towards OTP and NSP?
- How OTP and NSP can be improved to ensure compliance?

## **1.5 PURPOSE OF THE RESEARCH**

The study was of great importance because many of the children aged between 6-59 months who are admitted for SAM and MAM at the proposed study site do not come back for their follow-up visits post-discharge. Poor compliance to the OTP and NSP was empirically proven to have negative outcomes such as re-admission for SAM with complications (Akparibo et al. 2017). To better understand and address the issues of compliance with the OTP and NSP, factors that contribute to poor compliance were investigated. The information obtained would be relevant when planning and implementing tailored programmes. Strategies can be developed to address problems faced by mothers/caregivers of malnourished children ages between 6-59 months old, attending OTP and NSP at the proposed site and similar settings to a regional hospital in PMB, KZN.

## **1.6 STUDY AIMS AND OBJECTIVES**

The aim of this study was to identify the factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal.

The specific objectives were:

- a. To identify Socio-demographic factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal.



- b. To identify Psychosocial factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal.
- c. To identify if knowledge regarding the OTP and NSP affect the compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal.
- d. To identify ways in which compliance with the programmes can be improved



## 1.7 LAYOUT OF THE THESIS

This study is presented by six chapters:

Chapter 1: Provides the introduction of the research and a discussion of the background, rationale for the study, the problem statement, research question, purpose of the research project and study's aims and objectives.

Chapter 2: A review of literature on malnutrition and its treatment in South Africa and globally is provided.

Chapter 3: Discussion on the research study methodology used during the execution of the study.

Chapter 4: Findings of the study is presented.

Chapter 5: A discussion of the study findings and comparison with relevant literature is provided.

Chapter 6: A summary of the study findings, conclusions drawn, and recommendations are highlighted.



## CHAPTER TWO: LITERATURE REVIEW

### 2.1 DEFINITION AND CLASSIFICATION OF MALNUTRITION

Undernutrition results from continuous inadequate food intake to meet energy requirements, poor absorption, or excessive loss of nutrients, thus resulting in loss of body weight (Akparibo, Booth & Lee, 2017). According to Generation Nutrition (2016), undernutrition is a largely neglected issue which has received insufficient political and financial attention in the last decades. There are several forms of undernutrition namely, acute malnutrition (nutritional oedema, wasting, stunting), underweight, and micronutrients deficiency (Akparibo et al, 2017).

Acute malnutrition includes SAM and MAM (Akparibo et al, 2017). MAM is defined by moderate wasting or weight-for-length/height Z-score (WHZ)  $< -2$  and  $> -3$  on the WHO weight-for-height chart and Mid-upper arm circumference (MUAC)  $\geq 11.5$  cm and  $< 12.5$  cm. SAM is defined by the presence of nutritional oedema, severe wasting, on the WHO weight-for-height charts WHZ  $< -3$  and MUAC  $< 11.5$  cm (Akparibo et al, 2017).

Wasting or acute malnutrition is a condition where a child's weight is too low for his /her length/height and his/ her body waste away (Generation Nutrition, 2016). It is also associated with a high risk of mortality in children less than 5 years of age (Generation Nutrition, 2016). Stunting, which is a sign of chronic malnutrition, is a condition where a child's length/height is too low for his/her age because of long-term nutrition deprivation (Generation Nutrition, 2016). It is defined as having a length/height-for- age Z-score (HAZ)  $< -2$  as plotted on the length/weight-for-age WHO chart. According to Generation Nutrition (2016), it is associated with long term developmental and health risks. Micronutrient deficiencies which are usually referred to as hidden hunger, is the direct outcome of an inadequate intake of vital vitamins and minerals, which results in sub-optimal immune function while undermining growth and development (Generation Nutrition, 2016).

## 2.2 THE BURDEN OF MALNUTRITION

### 2.2.1. Malnutrition in the global context

The UNICEF (2018) reported that despite marked improvements in stunting, globally 150.8 million children (22.2%) under-5 years of age are stunted. Globally, the wasting prevalence was estimated to be almost 50.5 million (7.5%) for children under-5 years and 20 million new-born babies are born with a low birth weight. A review by Dukhi (2020), reported that Asia is the global wasting epicentre as 15.2% of under 5 years of age are wasted. Additionally, other global hotspots for wasting are Oceania, Southeast Asia and Sub-Saharan Africa (SSA) (Dukhi, 2020).

### 2.2.2. Malnutrition in the African context

Sub-Saharan Africa has one of the highest levels of child malnutrition globally (UNICEF, 2018). Globally the level of stunting in children under 5 years of age has decreased from 32% (198.4 million) in 2000 to 22.2% (150.8 million) in 2017. The numbers of children affected by stunting has increased from 50.6 million to 58.7 million due to population growth. However, the stunting in African countries decreased from 38.3% to 30.3% in 2017 (UNICEF, 2018). The prevalence of stunting in Africa now stands at 30%, which is greater than the global average prevalence of 21.9%. However, the wasting prevalence in Africa in the under-5 years of age group is 7.1%, thus lower than the global average which is 7.3% (UNICEF, 2019). In Africa, wasting for children under the age of 5 years was found to be low at 5.2% compared to the global prevalence of 7.5% (UNICEF, 2019). In the year 2010, South Sudan had the rate of wasting (24.3%) compared to other African countries with Eswatini/ Swaziland found to have the lowest rate at 2.0% (Dukhi, 2020). Some of the African countries also had significant higher wasting rates in children under 5 years of age which included 21% in Djibouti in 2012, 15.0% in Somalia in 2009, 14.8% in Mauritania in 2015, 13.5 % in Mali in 2015 and 13.3% in Chad in 2015 (Dukhi, 2020).

### 2.2.3. Malnutrition in the South African context

South Africa (SA) continues to experience a burden of malnutrition among its under-5 population in comparison with other African countries (UNICEF, 2019). Moreover, wasting and stunting are associated with increased mortality if both present at the same time in a child (UNICEF, 2019). Malnutrition in SA accounted for 4% of under-5 child mortality, with deaths related to SAM accounting for 31% of the total child death recorded in 2013 (CoMMiC, 2014:25). It has also become quite clear that children under-5 years who are wasted are more likely to become stunted and vice versa (CoMMiC 2014:25). According to UNICEF (2019), South Africa has a lower wasting prevalence at 2.5% among children under-5 years of age when compared to that of the developing world which stands at 8.9% (UNICEF, 2018).

### 2.2.4. Malnutrition in the province of KwaZulu-Natal

Results from the Committee on Morbidity and Mortality in Children (CoMMiC) (CoMMiC 2014:132) showed that uMgungundlovu's had an under-5 mortality rate which was 30.2% lower than the national rate of 38.5%. Deaths due to SAM was 29.4% lower than the national rate of 31.2%. However, the in-hospital case fatality rate of SAM was 22.1% for the uMgungundlovu district which was much higher than the national rate of 12% (CoMMiC, 2014:132). This was also found to be the highest rate for the KZN province when compared to the other districts in the province, with the exception being the Ugu district which also had a rate of 22.1%.

## 2.3 CAUSES OF MALNUTRITION

The UNICEF framework for malnutrition (Figure 1) provides a comprehensive understanding of the multiple causes of malnutrition that operate at the basic, underlying, and immediate level (Sanders & Reynolds, 2017). It can be used to identify the causes of undernutrition.

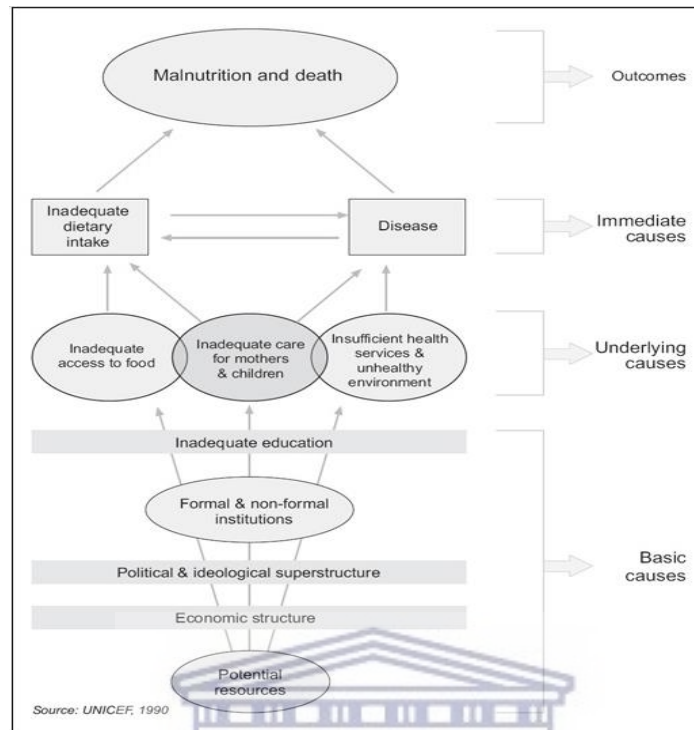


Figure 2: Conceptual framework on the causes of malnutrition and death (UNICEF)

### 2.3.1. Basic causes

The basic causes that may defeat the best effort of a household to attain good nutrition can be found at each level in society. These levels include the household level, community level, national level and international level (Sanders & Reynolds, 2017). The availability and control of resources such as political, legal, and cultural factors that may defeat the best effort of households to attain good nutrition are indicated in Figure 1 (UNICEF, 1990).

#### 2.3.1.1. Political factors

Certain political factors such as policy, decision making and economic situation caused by wars and inflation could contribute to undernutrition (Khaliq et al, 2008). In their review, Bain, et al. (2013) reported that most African governments have either underestimated, undermined, or have a minimum concern with respect to investing in and ensuring alleviation of malnutrition. The review also added that corruption is highest in the Sub-Saharan regions, with resources concentrated in the hands of a few (Bain et al, 2013). Political conflicts, especially in food producing areas could reduce farming activities even long after the conflict had been resolved

(Khaliq et al, 2008). In addition, state funds that are used inappropriately and corruption have led to division amongst people, wars with massive killings and further impoverishment of the population, aggravating the burden and consequences of malnutrition in Sub-Saharan Africa (SSA) (Bain et al, 2013).

The SSA rural and agricultural development has been neglected by the policies of national governments and international institutions over the past decades (Bain et al, 2013). Furthermore, structural adjustment programs policy aimed at closing budget gaps, created large human development deficits, skewed allocations of national revenue and foreign aid so that agriculture and nutrition were neglected (Bain et al, 2013). The review by Reinhardt & Fanzo (2014), revealed that the level of wealth at the household level is an indicator for increased risk of stunting. South Africa has policies to improve nutrition, yet SA is facing a triple burden of malnutrition, suggesting that policies and programmes have been poorly implemented (Sanders et al, 2019). The Growth Monitoring Programme (GMP) that has been implemented at the PHC level to promote optimal growth and development in children is facing some implementation challenges including little to no feedback to caregivers (Sanders et al, 2019).

#### *2.3.1.2. Cultural and religious factors*

Apart from economic and political factors, cultural factors also play an important role in child growth (Reinhardt & Fanzo, 2014). Certain health beliefs and cultures may contribute to nutrition-related problems. According to Suri & Acharya, (2016), sub-clinical vitamin A deficiency (VAD) was seen in certain cultures and religious groups that were prohibiting certain foods for children under five years of age. Some of the cultural factors, which have been shown to be important to the prevalence of stunting, are women's autonomy and fertility practices (Reinhardt & Fanzo., 2014).

#### *2.3.1.3. Low socioeconomic status*

Malnutrition also affects vulnerable groups from low socioeconomic status (Khaliq et al, 2008). Additionally, poverty is the reason that some families cannot produce or buy food (Suri & Acharya, 2016). The study by Suri & Acharya, (2016), showed a positive association between sub-clinical VAD and family income. The relationship could be explained on the basis that poverty is often linked with poor food consumption in children. Reinhardt & Fanzo, (2014), stated that poverty



combined with other socioeconomic and political problems, create the bulk of food insecurity around the globe. The KZN-District report (2011) has previously shown that in 2011, 21.3% of the population were unemployed and that 13% of households lived with an annual income below R4, 800 or less than R400,00 per month. The report by uMgungundlovu district health plan (UDHP) (2015:17), reported that 65% of the total population at uMgungundlovu district were economically active in the district however, 30% were unemployed which prove that the current unemployment status had deteriorate even further in the district.

### 2.3.2. Underlying causes

The underlying causes can be grouped under the three broad categories of: household food insecurity, inadequate care, and poor Public Health (PH) and unhealthy environment (Sanders & Reynolds, 2017). These are further broken down by Fenske et al, (2013), as: maternal health care (age, physical health, psychological status and nutrition status); household characteristics (household wealth, religion, parent education and household decision making role) and regional characteristics (state/district, urban/rural location, food production & distribution and population growth).

#### 2.3.2.1. *Inadequate Maternal and child health care*

Breastfeeding is known to be one of the most effective ways to ensure a child's survival and plays an important role in decreasing morbidity and mortality (Kumari, 2016). Infants and young children who are not breastfed are at greater risk of developing diarrhoea. Exclusive breastfeeding (EBF) up to the age of six months is very crucial to babies, however only 8% of children under 6 months of age are EBF (Du Plessis et al, 2016). This is due to the fact that 70% of infants are given solids before to the age of 6 months (Du Plessis et al. 2016). The factors cited by Du Plessis et al, (2016), which contributed to poor breastfeeding included: breastfeeding technique such as (poor latching/attachment and positioning), breast health problems such as mastitis, sore or cracked nipples and breast engorgement. In addition, Du Plessis et al, (2016), stated that these conditions interfere with the success and duration of breastfeeding practice during the first six months.



The Infant and Young Child Feeding Practices (IYCFP) is a set of well-known and common recommendations for appropriate feeding of new-born and children under 2 years of age (DOH, 2013:2-32). The optimal IYCFP include: early initiation of BF immediately after birth, preferably within one hour; EBF for the first 6 months of life that is (no other foods or fluid, not even water, but allows infant to receive oral rehydration solution, drops, syrup of vitamins, minerals and medicines when required); timely introduction of complementary foods after the age of six months; and continue breastfeeding for 2 years or beyond (KZN-DOH, 2013:2-32). According to Du Plessis et al, (2016), IYCFP recommendations are not being adhered to, which contribute to poor child health care and therefore undernutrition. In their study Kumari, et al. (2016), showed that some contributing factors towards poor IYCFP include: low level of maternal education and not enough information provided by frontline health workers. Additionally, poor caregiver knowledge on nutritious food during the complementary feeding stage could also result in undernutrition (Suri & Acharya, 2016). Parents who are more educated are often more aware of healthy diets including those rich in vitamins and minerals, to prevent any kind of undernutrition (Suri & Acharya, 2016). Inadequate maternal care is another factor that contributes towards undernutrition (Kumari, 2016). According to Kumari, (2016), poor prenatal and postnatal care has an impact on child growth. Thus, education on nutrition intervention should be incorporated during pregnancy and the post-natal period. Poor antenatal care (ANC) leads to low birth- weight babies which in turn make them more vulnerable to undernutrition (Kumari., 2016). The KZN province reportedly has the highest HIV prevalence among pregnant women for the past 13 years at 37.4% in 2012, compared to 29.5% nationally (KZN-Strategic Plan, 2015). Some of the biggest challenges to improved maternal and neonatal health outcomes in KZN as per the KZN-Strategic Plan (2015), include: the negative impact of HIV and AIDS; late booking for antenatal care; poor post-natal care; and delays in clients reaching health facilities during labour.

#### *2.3.2.2. Inadequate health services and poor environment*

Inadequate health services, poor environment including poor access to clean safe water, also affect the nutrition status of children mainly by increasing their chances of infection (Kumari, 2016). The poor health infrastructure and overburden of health services can compromise the quality of health care (Kumari, 2016). Insufficient resources to support the provision of essential services such as equipment and medication that can prevent malnutrition results in poor patient management and

therefore contribute to malnutrition (Suri & Acharya., 2016). Poor access to health care such as pre- and post-natal care, and infant and young child growth monitoring in developing countries contributes to the under-5-year infant and maternal mortality rate (Kumari., 2016). Some of the challenges that affect adequate health service delivery in the uMgungundlovu district as listed in the UDSP (2016:109), include: inadequate budget allocation for infrastructure projects; high inflation rate resulting in increased budget spending and so reducing the department's ability to afford sufficient resources; irregular expenditure; and the inability to finalize employment of staff due to issues of staff establishments.

Poor living conditions such as overcrowding are usually due to poverty and more likely to contribute to illness including malnutrition especially among young children (Suri & Acharya., 2016). The study by Nkosi, et al. (2019), showed that rapid urbanization unmatched by an associated supply of housing, has resulted in overcrowding in SA. The researchers also mentioned that household overcrowding in SA is associated with a range of ill-health which include respiratory infection and diarrheal disease (Nkosi, et al, 2019). Additionally, a poor environment such as a lack of safe drinking water and adequate sanitation, could result in the spread of infectious diseases including diarrhoea, which is one of the causes implicated in malnutrition (Suri & Acharya., 2016). In addition, Suri & Acharya (2016), reported that the burden of hidden hunger such as sub-clinical vitamin A deficiency (VAD) is great among pre-school children who are not receiving the recommended supplementary doses of vitamin A due to inadequate health services at PHC level. There are many struggles in the uMgungundlovu district such as socio-economic challenges like informal settlements, and high poverty and unemployment rates (UDHP, 2015:17). The uMgungundlovu district is mainly rural with 11.2% of households that do not have access to piped water and 2.6% without access to improved sanitation (KZN-district report, 2011).

#### *2.3.2.3. Household food security*

The Food and Agriculture Organization (FAO) (2010), define food security as “a situation that exists when all people at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”. There are four dimensions of food security namely, availability, access, utilisation, and stability (Gibson, 2012). In addition, four factors affect food security namely, individual constraints, household constraints, external constraints, and external shock (FAO, 2010). The individual

constraints could also be grouped as knowledge, habits, and symptoms. Studies have shown a strong link between malnutrition with inappropriate complementary feeding practices, and maternal poor education. Mothers who have primary and secondary schooling and above, are more likely to practice appropriate complementary feeding compared with those mothers who have no formal education (Kassa, et al, 2016).

Household constraints includes production, purchasing power and intra-household distribution (FAO, 2010). It is related more to a family being able to access food in terms of having their crops and enough money to purchase food (Gibson, 2012). Some families do not have enough food available for all persons in the household. Furthermore, some families do not have the capacity to buy food of acceptable quantity and quality and there are barriers to access food (Gibson, 2012). Household constraints further depends on the level of household resource capital, labour, and knowledge of prices.

External constraints include stigma, price, and market fluctuations (FAO, 2010). Food shortages caused by drought, poor distribution and floods are significant causes of malnutrition in many parts of the world (Gibson, 2012). When drought affects food security, the total production of food grains decreases which results in a shortage of food in the affected areas (Gibson, 2012). This thus contributes to the increased price of food with the result that some people cannot afford to buy food (Gibson, 2012). Food insecurity is often rooted in poverty and has a long-term impact on the ability of families, communities, and countries to develop (Gibson, 2012). Gibson (2012) describes hunger as one aspect of food security. In addition, Gibson, (2012), describes chronic hunger as an inadequate diet for a long time. Seasonal hunger is due to agricultural activities or hunger that cycles around the harvest and sowing seasonal activities and it is found in rural regions and in some cases in urban areas. In the uMgungundlovu district where the study site was conducted there many socio-economic challenges such as informal settlements, as well as high poverty and unemployment rates (UDHP, 2016:17).

### 2.3.3. Immediate causes

Immediate causes can be traced back directly to inadequate dietary intake and disease (Sanders & Reynolds, 2017). Thus, immediate causes could be due to an imbalance between the amount of

nutrients absorbed by the body and the amount of nutrients required by the body, as a consequence of little food intake or infection (Sanders & Reynolds, 2017).

#### *2.3.3.1. Inadequate dietary intake*

According to a study by Fenske, et al, (2013), inadequate dietary intake that results in stunting include inadequate breastfeeding (BF) practices, and inadequate complementary feeding. Poor breastfeeding practices especially in the developing world could lead to undernutrition in infants and children (Suri & Acharya, 2016). Poor breastfeeding practices that are known to contribute to hidden hunger globally include: the absence of exclusive breastfeeding (EBF) and a lack of vitamin and mineral-rich weaning foods (Suri & Acharya, 2016). It has been reported that despite a global commitment to promote EBF and other forms of breastfeeding as the nutritional method of choice, these targets are not being met effectively in many countries (Du Plessis, et al, 2016). A review done by Rollins, et al, (2016), on a breastfeeding series using data from other countries that reported on WHO IYCF indicators, showed that early initiation of BF and EBF are not adhered to in all countries. Furthermore, this review also showed a direct link between a country's national wealth and a decline in BF practices and breastfeeding duration (Rollins, et al, 2016).

Du Plessis, et al.'s review (2016), reported that there is limited national information on breastfeeding practices in SA. Moreover, the latest data available indicate that 88% of mothers initiate breastfeeding almost immediately post-delivery. Although this is an extremely high percentage, the review showed an 8% EBF rate from birth to six months of age, with over 70% of infants being given solid foods before the age of six months. Moreover, Du Plessis et al. (2016), concluded that the premature introduction of food and liquids to infants younger than six months has badly impacted on IYCF and children's health.

The two cross-sectional conducted by Horwood, et al. (2020), in PHC clinics in KZN showed that mothers who return to work or school are most likely to not breastfeed. Horwood, et al. (2020), concluded that despite improvements of EBF in KZN failure to initiate and sustain breastfeeding is still a challenge to achieve optimal breastfeeding practices in the province. Thus, more interventions are needed to address challenges, and to promote and support mothers who are breastfeeding. These include mothers returning to school or work and HIV-positive mothers (Horwood, et al. 2020).

### 2.3.3.2. Diseases

The vicious cycle of undernutrition and infectious diseases have long-term consequences on children's growth and development (Suri & Acharya., 2016). Diseases that cause undernutrition include HIV/AIDS, diarrhea, malaria and acute respiratory infection (Fenske, et al. 2013). Suri & Acharya (2016) reported that these diseases cause undernutrition because a sick child may not eat or absorb enough nutrients or may lose nutrients from the body due to vomiting and diarrhoea. They also added that with poor nutrition some parts of a child's immune system do not function properly, thus the skin and gut cannot effectively block disease-causing bacteria, viruses and parasite from entering the body (Suri & Acharya, 2016). The body's ability to absorb and retain nutrients are thus decreased in the presence of these diseases. The stress caused by the disease leaves these children more vulnerable to further illness and less able to absorb nutrients (Bhandari & Banjara, 2015). The presence of infectious disease such as pneumonia and diarrhoea may increase nutrient requirements which are not met by the child's diet and thus result in malnutrition (Suri & Acharya, 2016). For instance, if the child has pneumonia, breathing requires more work and this will require more calories. Additionally, infections can result in loss of appetite, increased nutrient requirements, and decrease absorption of consumed nutrients from food (Suri & Acharya, 2016).



## 2.4 MANAGEMENT OF ACUTE MALNUTRITION

The goal of the community management of acute malnutrition/integrated management of acute malnutrition (CMAM/IMAM) globally, is to bring treatment closer to people place of residence and make it less costly to access treatment by decentralizing sites and scheduling visits (e.g. weekly or monthly) (WHO, 2007:3). Additionally, CMAM is a PH intervention based on the principles of coverage, access, and cost-effectiveness (WHO, 2007:3). According to the WHO (2007:3), outpatient care is provided to children aged 6-59 months with SAM and MAM with a good appetite and no medical complications. Therefore, the following services are provided through outpatient care sessions at the health care centre:

- Medical assessment and anthropometric monitoring.



- Nutrition rehabilitation with RUTF.
- Basic medical treatment.
- Bi-weekly or monthly medical and anthropometric assessment and monitoring of treatment progress
- Continued nutrition rehabilitation with RUTF at home (Akparibo, et al. 2017; KZN-DOH, 2015:31-32).

Additionally, in-patient care is provided to infants between 6 months and 59 months with SAM with medical complications and no appetite (WHO, 2007:3).

The IMAM programme in KZN is one of the approaches which can be used to treat SAM and MAM at the out-patient department, community level, and household level (KZN-DOH, 2015:5). Children with SAM without complications can be treated as out-patients at accessible decentralized sites such as hospitals, Community Health Centers (CHC), primary health care (PHC) and “Phila Mntwana centres” (KZN-DOH, 2015:31). The “Phila Mntwana centres” are households identified by the ward counsellors and community leaders in the community where caregivers/mothers can access certain PHC services such as deworming, Vitamin A supplementation, weight monitoring and collection of nutritional supplements close to their homes and these centres are run by community care givers (CCGs) (KZN-DOH, 2015:49).

#### 2.4.1. IMAM/CMAM principles

According to Park, et al. (2012), all the IMAM programmes should adhere to the following principles:

##### *a. Maximum access and coverage*

The goal of the programme is to bring the treatment to where people live and make it less costly by having many decentralized sites and regular visits (Park et al. 2012). For example, in KZN the child can access the IMAM supplements at the hospital, community health center (CHC) and PHC level (KZN-DOH, 2018:44)

##### *b. Timeliness*

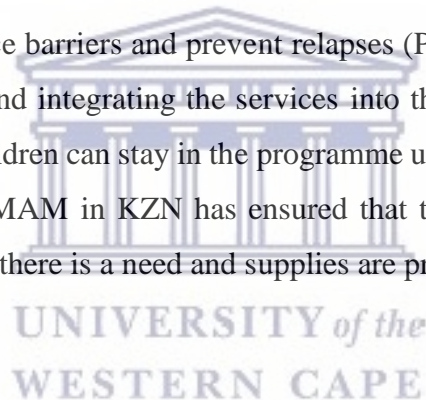
The aim is also for children under 59 months of age to start treatment before the onset of life-threatening illnesses (Park et al. 2012). Thus, decentralizing services allow for early detection because mothers/caregivers can be referred to health facilities' Paediatric Outpatient Department (POPD) close to their home.

*c. Appropriate medical and nutritional rehabilitation care*

Once the child with SAM/MAM has been identified they are seen by a healthcare provider with skills to assess and treat them (Park et al. 2012). The KZN-IMAM guideline provides full details of the multidisciplinary team who should be involved in the inpatient and outpatient management of a child with SAM (KZN-DOH, 2018: 58-67).

*d. Care for as long as it is need*

The goals of IMAM are to reduce barriers and prevent relapses (Park et al. 2012). Therefore, by improving access to treatment and integrating the services into the existing structure and health services, IMAM ensures that children can stay in the programme until they have recovered (KZN-IMAM, 2018). Additionally, IMAM in KZN has ensured that treatment can be offered on an ongoing basis and is available if there is a need and supplies are present.



#### 2.4.2. Classification and admission criteria of SAM and MAM for IMAM

Table 1 shows the different criteria for admission of children with SAM and MAM for in-hospital care and entry onto the OTP and NSP. Additionally, most of the SAM cases in KZN are also HIV-positive or have been diagnosed with TB and thus require in-hospital nutritional care and medical management (KZN-DOH, 2015:9). According to the KZN-DOH, (2015:37), the guidelines states that the child should remain on supplementation for 2 months after recovery to prevent relapse however, a child should not remain on supplementation for greater than 6 months across all categories. The CCG covering the geographical area of a child on OTP and NSP supplementation are assigned to conduct home visits. Home visits includes nutrition and health condition of a child, compliance with feeding practices for RUTF and home caring practices (KZN-DOH, 2015:49).

The SAM patient with complications that include bilateral oedema, wasting, no appetite and other Integrated Management of Childhood Illness (IMCI) danger signs will be admitted for in-patient

care. Patients classified as SAM without complications and MAM are not treated according to the in-hospital WHO 10 steps protocol but will commence management in the rehabilitation phase to promote catch-up growth (KZN-DOH, 2015:9). The admission criteria for SAM without complications and MAM onto the OTP and NSP, includes recovering SAM cases referred from in-patient care, newly diagnosed SAM without complications, and MAM cases referred from the community, patients with a MUAC >11.5 cm to 12.4 cm, with a good appetite and who re clinically alert (KZN-DOH, 2015:31).

Table 1: KZN-IMAM classification of SAM & MAM criteria for in-hospital OTP and NSP admission (Adapted: KZN-DOH, 2015:11)

<b>MAM</b>	<b>SAM (without complications)</b>	<b>SAM (with complications)</b>
<ul style="list-style-type: none"> <li>• MUAC <math>\geq</math> 11.5cm and &lt; 12.5 cm</li> <li>OR</li> <li>• WHZ <math>\geq</math> -3 and &lt; -2</li> </ul>	<ul style="list-style-type: none"> <li>• Bilateral pitting oedema (+), or without oedema</li> <li>• MUAC &lt; 11.5 cm</li> <li>OR</li> <li>• WHZ &lt; -3               <ul style="list-style-type: none"> <li>○ Good appetite</li> <li>○ Alert</li> <li>○ No Integrated Management of Childhood illnesses (IMCI) general danger sign</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Bilateral pitting oedema (all grades)</li> <li>(Plus, any one of the following signs)               <ul style="list-style-type: none"> <li>○ no appetite</li> <li>○ no alert (lethargic)</li> <li>○ IMCI general danger sign</li> </ul> </li> <li>• MUAC &lt;11.5 cm</li> <li>OR</li> <li>• WHZ &lt;-3</li> </ul>

### 2.4.3. Screening and admission using MUAC

The MUAC which is only used in children from the age of 6 months, is recommended as one of the best tools for screening in IMAM services (Park et al. 2012). According, Park, et al. (2012),



MUAC was endorsed as an independent criterion for referral and admission to treatment services for SAM. However, IMAM guidelines should incorporate WHZ in addition to MUAC (Park, et al. 2012). A MUAC is regarded as a useful screening tool in the community setting interventions and a better predictor in children (Dukhi, Sartorius & Taylors, 2017). The study by Dukhi et al. (2017) to compare MUAC and WHZ as indices of acute malnutrition in children aged 0 to 59 months in SA, showed that WHZ was found to be the most sensitive measure of SAM. Additionally, at a household level MUAC was preferred as a quick and easy measuring tool (Dukhi et al. 2017).

A MUAC < 11.5cm in children aged 6-59 months indicates severe wasting. Additionally, a MUAC  $\geq$ 11.5cm and up to 12.5cm indicates MAM. The advantages of MUAC is that it is a simple, quick, accurate and inexpensive method to assess nutritional status. In addition, the colour-coded MUAC tape is easy to use by trained illiterate people (Park et al. 2012).

#### 2.4.4. Components of IMAM: OTP and NSP

The IMAM components as outlined by IMAM Standard Operation Procedures (SOP) includes in-patients care, OTP, and community outreach (IMAM-SOP, 2019:7-70). This study only focused on OTP and NSP, which is known as the outpatient care component. Through these programmes, the patient with SAM who has no complications receive care at decentralized health facilities (UNICEF, 2016:2-3).

The OTP provides home-based treatment and rehabilitation using Ready-to-use food (RUTF) which is an energy-dense, mineral and vitamin-enriched food specially designed to treat malnutrition (UNICEF, 2016:2). The programme was designed to treat children who were previously admitted to hospital with complicated SAM and children with MAM. Once the children with complicated SAM are stabilized in hospital, they are referred to the OTP on discharge (UNICEF, 2016:2). It is recommended that the OTP should be operated in as many facilities as possible and be incorporated into existing healthcare services as a component of routine service for children under the age of 5 years. This will ensure a good geographic coverage which will provide many malnourished children with access to effective treatment (UNICEF, 2016:10).

The NSP program involves the provision of take-home food rations and routine basic medical treatment, anthropometric assessment, counselling, and feeding support of children with SAM and MAM who has been down-referred from the OTP (UNICEF, 2016:43). Foods in the NSP usually consist of powdered milk and imported or locally produced blended foods which has been fortified with minerals and vitamins (UNICEF, 2016:43).

The KZN IMAM guidelines have combined OTP and NSP, thus both programmes provide services simultaneously to avoid overcrowding due to staff shortage (KZN-DOH, 2015:31). Children under-5 are not down-referred from OTP to NSP, hence they receive both OTP and NSP services simultaneously. The nutrition supplements of both the OTP and NSP are thus collected on the same day. For example, if an 18-month-old SAM patient with no complication is admitted to OTP, the child will get both OTP and NSP nutrition supplements simultaneously, that is: RUTF, enriched maize meal porridge (EMM), lactose free milk LFM), instead of just receiving RUTF only.

#### 2.4.5 OTP and NSP supplements

The RUTF is one of the main supplements provided during the SAM rehabilitation phase (IMAM-SOP, 2019). It is prepared in the form of an energy-dense paste containing no water ((Park, et al. 2012). It is nutritionally equivalent to F-100, made from peanuts, dried milk, oil, sugar, and micronutrients. Additionally, RUTF does not easily support bacterial growth, thus it can be stored safely at room temperature for several months (Park, et al. 2012). The addition of micronutrients confers greater efficacy to the IMAM programme based on the utilization of RUTF. Furthermore, SAM children gain weight effectively when they consume RUTF (Park, et al. 2012). Thus, the introduction of RUTF as part of treatment of SAM during IMAM has resulted in fundamental changes in the management of SAM (Park, et al. 2012). In KZN in addition to RUTF, children aged 6-59 months are given EMM, LFM and infant cereal (IMAM-SOP, 2018:16-17). Appendix 2 illustrates the required energy and the daily intake of the supplements and monthly supplies provided for each child. This is to ensure that families with poor household food security are provided with enough supplements to improve a child's weight while on the IMAM programme.

#### 2.4.6. Criteria for discharge from OTP and NSP

The KZN IMAM guidelines specifically, highlight that the children should not remain in both programmes for more than 6 months (KZN-DOH, 2015:35). Failure to improve after 6 months of a programme indicates treatment failure and further investigations. Additionally, the guidelines state that if the child shows no improvement after 2 months of being enrolled on the OTP and NSP, the healthcare workers (Dietitian, Nurses and paediatrician) should determine the reasons for failure to respond to treatment (KZN-DOH, 2015:35). The criteria for discharge on OTP and NSP are:

- MUAC  $\geq$  12.5cm or
- WHZ  $\geq$  -1SD
- Referral process: In KZN once the child has been discharged from the OTP and NSP, the child will be down-referred to the PHC or Phila Mtwana centre for growth monitoring programmes (GMPs) (KZN-DOH, 2015: 35-36).

#### 2.4.7. Performance indicators for CMAM

Community Management of Acute Malnutrition (CMAM) was developed in the late 1990s and early 2000s to achieve a nutrition recovery rate of almost 80% with a low case fatality rate of < 5% (Akparibo, et al. 2017). A study by Akparibo et al. (2017), found that the CMAM approach is a successful intervention that can be used to treat the majority of children with SAM at home using RUTF and basic medication. Thus, they concluded that the CMAM approach can achieve successful outcomes in nutritional recovery and promote clinical survival.

<b>Indicators</b>	<b>Proportion</b>
Proportion of children who die in the programme.	<10%
Proportion of children who recover in a programme	>75%
Proportion of children who default from the programme	<15%

Minimum rate of weight gain (g/kg/person/day)	>8
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Table 2: Minimum standards for measuring programme effectiveness (Akparibo, et al. 2017).

#### 2.4.8. Problems with compliance to CMAM/IMAM

In their study Satiawati & Januraga (2018), found that some of the reasons that children younger than 5 with MAM responded negatively towards supplemental nutrition assistance programmes had to do with the caregiver's preference in terms of the types of supplements food on offer, and also the caregiver's perceptions that the child was not in fact, in a state of illness due to malnutrition. Additionally some caregivers did not require supplementary food as they maintained that they were able to buy it independently, but a lack of knowledge on which foods would be nutritionally dense and improve the children's weight, was limited. Other factors were also related to lack of support for health care workers working with malnourished.

The study of Simplified Algorithm and Tools in South Sudan June 2018 by Kozuko et al. (2018), found that out of 320 children between 6-59 months of age treated with uncomplicated SAM, 91% recovered from SAM to moderate acute malnutrition (MAM), surpassing the 75% sphere standard and the remaining 9% defaulted. No deaths were reported. Reported reasons for defaulting included the child moved away, caregiver did not have time to bring the child, child admitted at the facility centre and not available (Kozuko et al, 2018)

In their review, Akparibo, et al. (2017), found that the reasons for defaulting included: the travelling distance to sites, family illness, other commitments, other household priorities, poor community sensitization, and no household follow-up by community care givers (CCGs). Thus, improved community outreach was identified as a mechanism for addressing these issues (Akparibo, et al. 2017).

Conclusion

## **CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY**

### **3.1 STUDY DESIGN**

A descriptive cross-sectional study design was used to conduct this study. It was the most suitable study design for this study (Gerritsen, et al. 2008). Additionally, this study type allows multiple variables; thus, it can determine risk factors (Gerritsen, et al. 2008). The quantitative study was conducted between October 2020 and February 2021.

### **3.2. THE STUDY POPULATION AND SAMPLING**

This study enrolled all the mothers/caregivers of children aged 6-59 months who has been attending OTP and NSP for longer than 1 month at the dietetics department at the regional hospital. There were about 6 to 20 mothers attending OTP and NSP at the study site daily. All the subjects with children aged 6-59 months old who were diagnosed with either SAM or MAM. The simple random sampling method was used to select the potential participants. This was done using a lottery method.

The inclusion criteria were as follows:

1. Mothers/caregivers over 18 years of age, of malnourished children aged 6-59 months enrolled in the OTP and NSP at the study site.
2. All mothers/caregivers of malnourished children aged 6-59 months enrolled in the OTP and NSP at the study site who signed the consent form.
3. All mothers/caregivers of malnourished children aged 6-59 months enrolled in the OTP and NSP residing in the immediate surrounding areas as well as the catchment areas of the study site. Most of these locations has low SAM and CMAM coverage (< 50%), mainly because of a lack of community awareness and recognition of SAM, and high travel and opportunity costs of caregiving of those who participated in the CMAM treatment.
4. All mothers/caregivers of malnourished children who had SAM and MAM with or without HIV and TB were included.

5. All mothers/caregivers of malnourished children speaking iSi-Zulu and Sesotho with children aged 6 to 59 months attending OTP and NSP at the study site. Most of the population around the catchment area speak iSi-Zulu and Sesotho due to a large number of immigrants from Lesotho. The catchment area is also full of rural areas and some illegal squatter camps. Poverty and food insecurity in these areas leave parents with limited choices of food, resulting in malnutrition in children.
6. Children who were ex-premature, had cerebral palsy and trisomy 21 were included, due to their underlying condition these children are more at risk of malnutrition.

The exclusion criteria were as follows:

1. Mothers/caregivers younger than 18 years of age, of malnourished children aged 6-59 months enrolled in the OTP and NSP at the study site.
2. Children admitted as not acutely malnourished but at risk of malnutrition, as they were only followed up for a short period of time.
3. Those admitted with clinical conditions such as nephrotic syndrome, galactosaemia and genetic disorders e.g., achondroplasia and microcephaly.
4. Parents who did not give consent.
5. SAM and MAM children older than 59 months and less than 6 months.

### **3.3 SAMPLE SIZE**

Compliant and non-compliant groups of mothers/caregivers were identified from the outpatient Dietetics department Nutrition Care Plan (NCP) records by the researcher. Thereafter a random sampling technique using a lottery method was used to identify compliant and non-compliant mothers/caregivers' groups. All the selected caregivers and mothers of children diagnosed with SAM and MAM attending OTP and NSP for nutritional supplements at the study site were asked for consent to be interviewed by the researcher to collect the data.



The sample size was calculated to determine number of participants or apopulation of 375 with absolute precision of 0.05 and standard normal deviation of 1.96 (95%). Therefore, the required sample required using Epi Info sample size calculator was estimated to be  $n = 200$ .

### **3.4 DATA COLLECTION TOOL**

A structured questionnaire was developed avoiding leading questions and creating interview questions that are clear and easy to understand, which was used to collect the data (Appendices 9, 10 and 11). The structured questionnaire assessed demographic details, psychological factors, reason for non-compliance and their knowledge of malnutrition. Mothers/caregivers were also given a list of options from which they could select more than one or make suggestions of their own on how to improve both programmes. Both the questionnaire and the consent form were translated into iSi-Zulu and Sesotho. An interview guide which was used throughout the study to ensure standardization and consistency across the interviews was also developed.

### **3.5 PILOT STUDY**

The questionnaire including those translated to Isi-Zulu and Sesotho was pre-tested on 5% of the caregivers/mothers of children with SAM and MAM prior to data collection to ascertain content and face validity. The study was conducted at the same study site and all caregivers and mothers included in the pilot were excluded in the final study. After pre-testing all the ambiguous and misleading information were reviewed by the researcher, and possible errors were returned for correction. Wrongly interpreted questions were omitted, and the questionnaire were revised in accordance with the findings of the pre-test.

### **3.6 DATA COLLECTION**

Simple random sampling using the lottery method, was used to select the potential participants. Using this method, the sample was selected in such a way that each unit of population had an equal chance of being included. In total there were 14 to 20 mothers/caregivers that were booked for the OTP at the study site on a daily basis which included both compliant and non-compliant

mothers/caregivers. Booked caregivers' folders/ NCP were allocated a number from 1 to 14. Another set of numbers (1 to 14) was placed in a box and mixed thoroughly. The researcher then picked numbers from the box and all the mothers/caregivers bearing the corresponding number (either compliant/non-compliant) were asked to accompany the researcher to a private consultation room where the purpose of the study will be explained to them. After the researcher recruited caregivers/mothers and shown interest in the study and are eligible to partake, the researcher provided mothers/caregivers with the full informed consent form. The researcher read the consent document and ask mother/caregiver if they would like to participate in the study.

After informed consent was obtained, a 10-15-minute interview was conducted by the researcher in the language of their choice using the questionnaire. The data was collected by the researcher since she can communicate in both Isi-Zulu and Sesotho. The data was collected through a face-to-face interview with the mothers/caregivers using the structured questionnaire and through review of the NCP. To ensure the safety of the mothers/caregivers and their infants/toddlers, the waiting area of mothers and children was reduced to a maximum of two patients at a time. The area for the interview had a table counter shield and both the interviewer and the caregiver were wearing a mask at all time. Additionally, the area was sanitised before and after each participant. Moreover, as part of COVID-19 safety protocol, all the caregivers and children were screened prior to entering the hospital.

### **3.7 DATA ANALYSIS**

The data was checked for completeness and consistency by the researcher each day. The data was then coded and entered into an Excel spreadsheet. After the data was cleaned, it was exported to Statistical Package for the Social Science (SPSS) version 26 for analysis.

Analysis was carried out as follows: firstly, a bivariate analysis was performed to determine the associated factors of poor compliance. Statistical association was checked by 95% confidence interval (CI) and crude odds ratio. Secondly, the significant variable ( $P\text{-value} < 0.2$ ) observed in a bivariate analysis was subsequently included in multivariate analysis. Additionally, 95% CI and adjusted ratios was checked, and the significance variable was taken as associated factors of poor compliance in OTP and NSP. Thus, a  $P\text{-value}$  less than 0.05, 95% CI and odds ratio was



considered as statically significant. The study data is presented as frequencies, proportions, in graphs, and cross tabulations.

### **3.8 VALIDITY AND RELIABILITY**

The questionnaire was pre-tested prior to data collection to ascertain content and face validity. Reliability refers to quality control measures taken during data collection. The questionnaire was checked daily for completeness, consistency, and clarity. Thus, data collection was carefully planned to eliminate possible sources of bias during data collection. This was done by using closed-ended questions and where open-ended questions were used, guidelines/clarity was provided to mothers/caregivers.

### **3.9 ETHICS CONSIDERATIONS**

Ethics clearance was obtained from the Biomedical Research and Ethics Committee (BMREC) at University of Western Cape (UWC). Permission to conduct the study at the proposed study site was requested from Chief Executive Officer (CEO) of the hospital, and the Department of health-KZN (DOH-KZN). Consent from mothers/caregivers was obtained after the objectives of the study have been explained to them. Privacy and confidentiality of collected information were ensured at all levels. Code numbers were given for each interview form to ensure anonymity of data, and the consent forms which contains the participants' name and signature were kept separate from the questionnaires.

#### *i. Protecting the rights of participants*

- The purpose of the study was explained to the caregivers and when they agreed to participate in the study, they were asked to complete an informed consent form (Appendices 6, 7 and 8).
- Care was taken to ensure anonymity of participants during data management, analysis and results dissemination; by using codes on the questionnaires and during data analysis.

#### *ii. Protecting the rights of the institution*

- Ethics clearance was requested from the biomedical research and ethics committee (BMREC) at UWC.

*iii. Protection of the study site*

- After approval was obtained from biomedical research and ethics committee (BMREC) at UWC, the researcher obtained permission from DOH-KZN to conduct the study at the proposed study site. Before the data was collected, the researcher presented copies of the letters from UWC and DOH-KZN to seek permission to conduct the study from the CEO of the hospital and head of the Dietetics department.
- To help to protect the patient's confidentiality, the collected information was kept in a safe place in a locked cabinet only accessible by the researcher. Additionally, during the data analysis the data was stored in a password protected computer file.
- The data will be kept for a period of 5 years. The researcher applied for the temporary ownership of data from the data management department at the regional hospital. When the 5-year period has elapsed, the non-electronic data (questionnaires) will be shredded, and the researcher will seek assistance from the computer service department within the regional hospital to with the erasure of the electronic data to ensure that it has been securely erased. Furthermore, to maintain anonymity, no names was included in the data abstraction tool, codes were used instead and only the researcher has access to the codes.

## CHAPTER 4: RESULTS

### 4.1 INTRODUCTION

The aim of the study was to determine factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, KwaZulu-Natal. Frequencies were done for: Bivariate analysis using Pearson Correlation exact tests were used for categorical data and independent variables. Multivariate analysis using logistic regression test was done for all variables reaching significance during bivariate analyses ( $P < 0.05$ ).

### 4.2 SOCIO DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

A total of 200 people participated in the study. The sociodemographic details of the study participants are presented in Table 3.

Variable	Frequency (%)	Mean	Std. Deviation	N
<b>Compliant &amp; non-compliant</b>		1.21	.41	200
<b>Compliant</b>	159 (79.5)			
<b>Non-compliant</b>	41 (20.5)			
<b>Mother age distribution (Years)</b>		28.68	7.92	200
18-20 years	26 (13)			
21-39 years	157 (78.5)			
40-60 years	17 (17)			
<b>Marital status</b>		1.58	1.31	200

Single	157 (78.5)			
Divorce	18 (9)			
Separated	1 (0.5)			
Living with partner	2 (1.0)			
Other	2 (1.0)			
<b>Education</b>		3.02	.60	200
No schooling	4 (2.0)			
Primary	16 (2.0)			
Secondary	155 (77.55)			
College	22 (11.0)			
University	2 (1.0)			
Other	1 (.05)			
<b>Income (in Rands)</b>		1.83	.70	200
<1000	63(31.5)			
1000-3500	110(55.0)			
>3500	26(13.0)			

Table 3: Socio-demographic characteristics of mothers/caregivers of children ages 6-59 enrolled in outpatient nutrition programme in Pietermaritzburg.

Of the total study sample, 159 (79.5%) were compliant with the CMAM/IMAM and 41 (20.5%) non-compliant. The mean SD age of mothers/caregivers was 28.68 (7.92) years. According to table 3, the mean values for the two groups (compliance/non-compliance) vary. This indicates that there is a significant difference between the socio-demographic characteristics of compliance and non-compliance group in relation to mothers' age in years, marital status, education and income.

Their ages ranged between 20-39 years (n=157;78.8%), 26 (13%) were aged between 18-20 years and n=17 (8.5%) was aged between 40-60 years. Most 157 (78.5%) of the caregivers were single,

20 (10.0%) were living with their partner, 1 (0.5%) was divorced, 2 (1.0%) were separated and 2 (1.0%) were widowed. Only 9.0% (n= 18) were married.

Almost all the participants had attended school with the majority 155 (77.5%) having attended secondary. Only a few of the respondents attended university at 1.0% (n= 2). There was also few who had no schooling at 4 (2.0%), 16 (8.0%) had primary, 22 (11.0%) had college and 1 (0.5%) had other including postgraduate diploma. Figure 2 shows the education level of the participants.

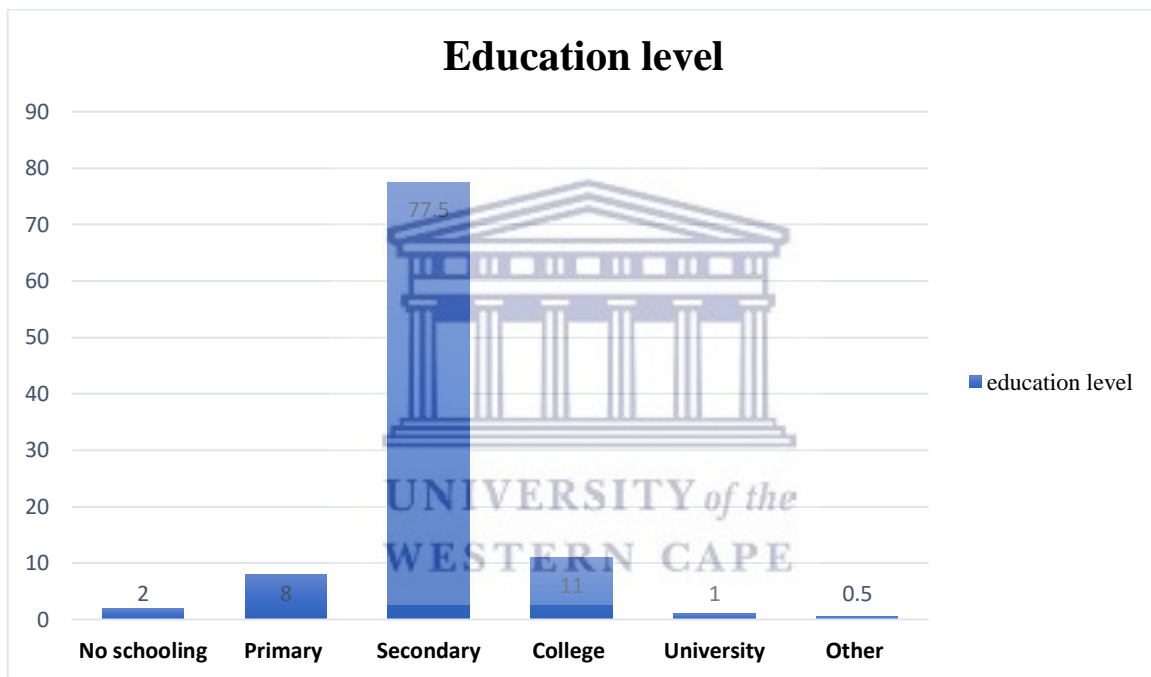


Figure 3: Education of mothers/ caregivers

Of the caregivers 92.0% (n=184) were local, and 7.0% (n= 14) were non-local. Of 200 mothers/caregivers 15.5% (n=31) had been collecting supplements more than once and 29% (n=58) had been collecting the supplements for the average of 6 months. The majority of the mothers/caregivers had an income between R1000 - R3500 that is 55% (n=110), and of the 200 caregivers 31.5% (n= 63) had an income of less than <R1000, with only 26% (n=13%) had and an income of more than R3500. Figure 3 showing caregivers/mothers income.

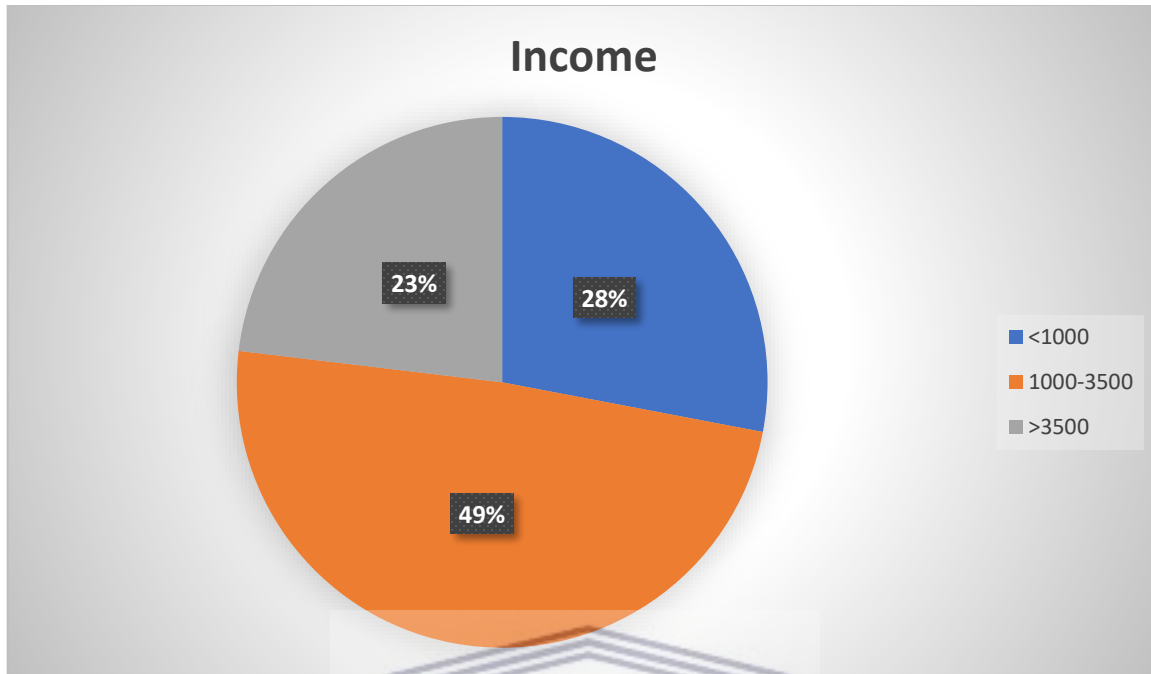


Figure 3: Income of caregivers/ mothers

#### 4.3 PSYCHOSOCIAL FACTORS

Section B of the questionnaire consisted of 4 questions, covering respondents OTP and NSP perceptions of programme knowledge towards NSP and OTP, importance of NSP and OTP, child's intake of NSP and OTP supplements and whether the supplements were improving child nutrition status (i.e weight).

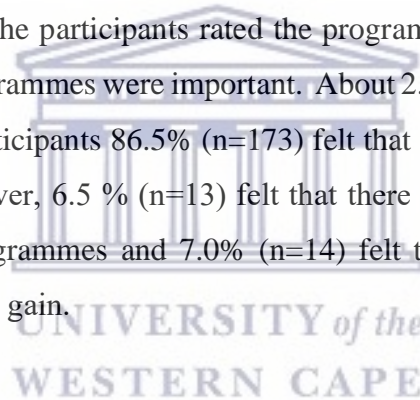
	Frequency	Percentage%
<b>Knowledge on OTP &amp; NSP</b>		
<b>Good 3</b>	173	86.5
<b>Not sure</b>	19	9.5
<b>Not good 1</b>	8	4
<b>Importance of OTP &amp; NSP</b>		
<b>Good 3</b>	171	85.5
<b>Not sure</b>	24	12

<b>Not good 1</b>	5	2.5
<b>OTP and NSP improved child weight</b>		
<b>Yes</b>	173	86.5
<b>Somewhat</b>	14	7.0
<b>No</b>	13	6.5

Table 4: Caregivers/mothers perceptions towards OTP/NSP

Of the 200 participants, 9.5% (n=19) didn't know the purpose of the two programmes and why their children were on it. Four percent (n=8) did not have a good knowledge about the 2 programmes and 86.5% (n=173) had the good knowledge about the 2 programmes.

Eighty-five percent (n=171) of the participants rated the programme important. However, 12% (n=24) were not sure if both programmes were important. About 2.5% (n=5) rated the programmes as unimportant. Most of the participants 86.5% (n=173) felt that the programmes have improved their child's weight gain. However, 6.5 % (n=13) felt that there was no weight improvement in their children while on the programmes and 7.0% (n=14) felt that the programmes somewhat improved their children's weight gain.



#### 4.4 REASONS FOR NON-COMPLIANCE WITH THE OTP AND NSP

More than half of the participants 53% (n=106) indicated that it was not easy to collect the supplements, 30% (n=60) indicated that it was very easy, and 17%(n=34) saying it was not really easy. Four point five percent (n= 9) indicated that they forgot the dates, 20.5% (n=41) complained of the travelling distance, 5.5% (n=11) had other household priorities, and 16.5% (n=33) had no money to come to the hospital. About 13.0% (n=26) had other reasons not included on a questionnaire, which were: *Mother going to register to study at the college, being out of town, scared of COVID and COVID regulations made it difficult, one of the other children was sick, did not know the child was attending OTP/NSP (in the case where child moved from one caregiver to another). misplaced the appointment card, dates clashed with another hospital date (in the case*



where child was also receiving tertiary treatment.), funeral at home, other family-related problems, and mother was in another country, e.g. Lesotho.

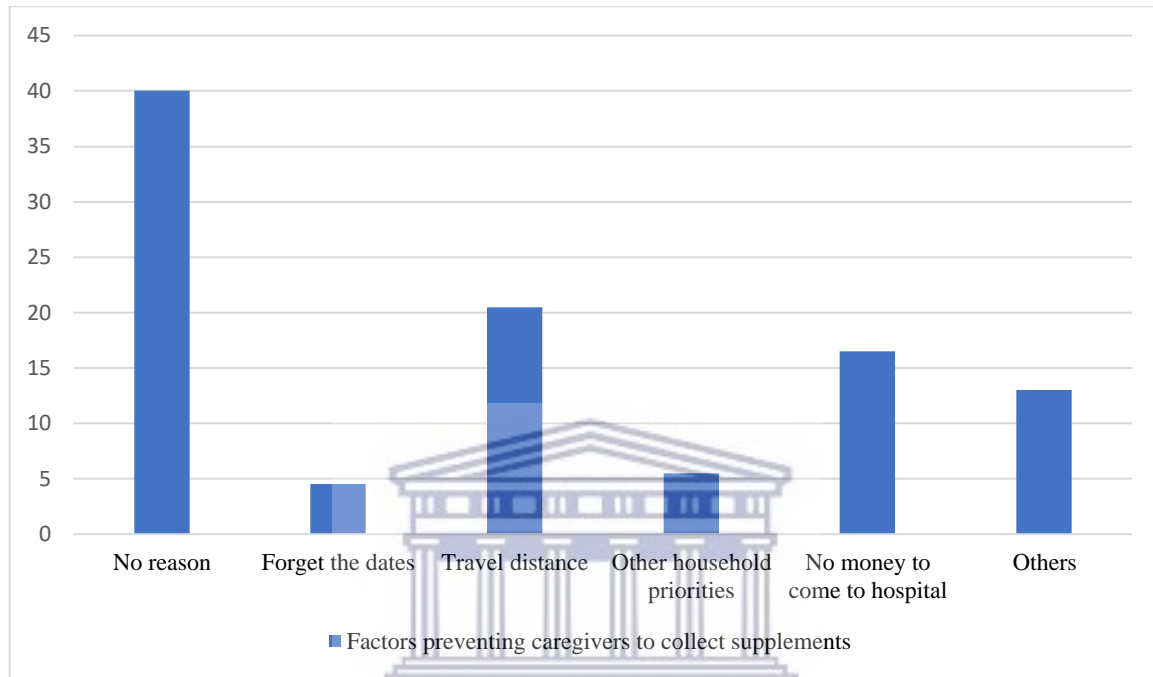


Figure 4: Factors preventing caregivers/ mothers from collecting supplements (Percentage)

#### 4.4.1 Predictors for non-compliance towards outpatient nutrition programme

	Total n (%)	Mean	Std. Deviation	P value
<b>Compliance &amp; non-compliance</b>		1.21	.41	
<b>Factors preventing to collect supplements</b>	200	3.23	2.29	.38**
<b>Caregiver/mother's age</b>		28.68	7.92	
<b>Knowledge</b>	200	2.83	.475	-.21**
<b>Caregiver/mother's age</b>		28.68	7.92	

<b>Importance</b>	200	2.83	.438	-.18**
<b>Caregiver/mother's age Factors preventing to collect</b>	200	28.68	7.92	-.08
<b>How easy to collect supplements? Income</b>	200	3.23	2.29	.20**
<b>Schooling Knowledge</b>	200	4.22	1.44	.28**
<b>Schooling Importance</b>	200	1.84	.71	.27**
<b>Marital status How easy to collect supplements?</b>	200	3.03	.60	.08
<b>Marital status Factors preventing to collect supplements</b>	200	2.83	.48	-.09
		3.03	.60	
		2.83	.44	
		1.58	1.31	
		1.77	.88	
		1.58	1.31	
		3.21	2.27	

\*\*significant values that is P-value is less than 0.01

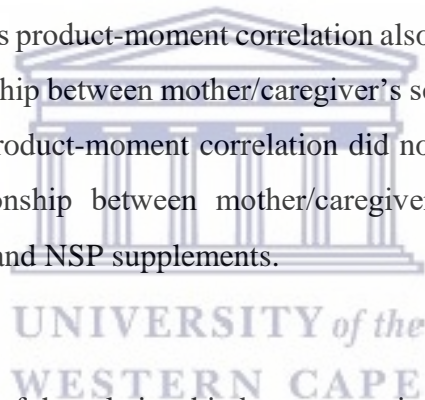
Table 5: Predictors for non-compliance towards outpatient nutrition programme

There was a positive correlation between the compliant and the factors preventing them to collect supplements, which was statistically significant ( $r=.38$ ,  $n=200$ ,  $p=0.000$ ). Similarly, there was also a positive correlation between non-compliant and the factors preventing them to collect supplements, which was statistically significant ( $r=.38$ ,  $n=200$ ,  $p=0.000$ ). According to table 5, the mean values for the two groups (compliant/non-compliant) vary. This indicates that there is a significant difference between the factors affecting the compliance between compliant and non-compliant group in relation to caregivers/mother's knowledge, age, income, schooling and marital status.

A Pearson's product-moment correlation found a statistically significant ( $r=-.21$ ,  $n=200$ ,  $p=0.03$ ) relationship between the mother/caregiver's age and knowledge towards OTP and NSP. Thus, indicating that mother/caregiver's age is negatively related to knowledge toward OTP and NSP.

Similarly, the Pearson's product-moment found a statistically significant ( $r=-.18$ ,  $n=200$ ,  $p=0.12$ ) relationship between mother/caregiver's age and importance of OTP and NSP. Moreover, a Pearson's product-moment correlation did not find a statistically significant ( $r=-.08$ ,  $n=200$ ,  $p=0.67$ ) relationship between mother/caregiver's age and factors preventing them to collect OTP and NSP supplements. The Pearson's product-moment correlation found a statistically significant ( $r =.20$   $n=200$ ,  $p=0.05$ ) relationship between how easy was to collect OTP and NSP supplements and caregivers/mother's income, thus indicating small effect.

A Pearson's product-moment correlation found a statistically significant ( $r=-.28$ ,  $n=200$ ,  $p=0.00$ ) relationship between mother/caregiver's schooling/education and knowledge towards OTP and NSP. Additionally, a Pearson's product-moment correlation found a statistically significant ( $r=-.27$ ,  $n=200$ ,  $p=0.00$ ) relationship between mother/caregiver's schooling and how important was to attend OTP and NSP. A Pearson's product-moment correlation also found a statistically significant ( $r=-.27$ ,  $n=200$ ,  $p=0.00$ ) relationship between mother/caregiver's schooling and important towards OTP and NSP. The Pearson's product-moment correlation did not find a statistically significant ( $r=-.089$   $n=200$ ,  $p=.21$ ) relationship between mother/caregiver's marital status and factors preventing them to collect OTP and NSP supplements.



#### 4.4.2. Multi- regression analysis of the relationship between socio-demographics and the number of supplement collections

Multi-regression analyses were conducted to examine the relationship between compliance and non-compliant caregivers/mothers of children between ages of 6-59 months and income, school, residence, and number of times they collected supplements. To determine whether the one-way MANOVA was statistically significant the Table 6 below at the Sig. column indicate the values. Table 6 Shows the Sig value of .922 and .315, which means  $p >.0005$ . Therefore, there was no statistical difference between compliance and non-compliant caregivers/mothers of children between ages of 6-59 months based on income, school, residence and number of times they collected supplements,  $F(2,197) = 0.82$ ,  $P > .0005$ ; Wilk's  $\Delta = 0.999$  /  $F(2,197) = 1.161$ ,  $P > .0005$ ; Wilk's  $\Delta = 0.988$ .

#### **Multivariate Tests<sup>a</sup>**

Effect		Value	F	Hypothesis df	Error df	Sig.
<b>Compliant and noncompliant</b>	<b>Pillai's Trace</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Wilks' Lambda</b>	.999	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Hotelling's Trace</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Roy's Largest Root</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
<b>Compliant and noncompliant</b>	<b>Pillai's Trace</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Wilks' Lambda</b>	.999	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Hotelling's Trace</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
	<b>Roy's Largest Root</b>	.001	.082 <sup>b</sup>	2.000	197.000	.922
<b>Compliant and noncompliant</b>	<b>Pillai's Trace</b>	.012	1.161 <sup>b</sup>	2.000	197.000	.315
	<b>Wilks' Lambda</b>	.988	1.161 <sup>b</sup>	2.000	197.000	.315
	<b>Hotelling's Trace</b>	.012	1.161 <sup>b</sup>	2.000	197.000	.315
	<b>Roy's Largest Root</b>	.012	1.161 <sup>b</sup>	2.000	197.000	.315

Table 6: Multivariate tests

a. Design: Intercept + compliant and non-compliant

b. Exact statistic

sig.column = significant column

#### 4.4.3 Multivariate test results of three-way multivariate analysis of variance.

A multivariate Test was done to look at the effect effects: knowledge, importance, do supplements improve weight gain, how easy was it to collect supplements and factors preventing to caregivers/mothers to collect supplements Wilks' Lambda row in Table 6 above. The one-way MANOVA was statistically significant since Sig column values were .000, which means  $p < .0005$ .

Therefore, we can conclude that knowledge, importance, does supplements improve weight gain, how easy was it to collect supplements and factors preventing to caregivers/mothers to collect supplements was statistically significantly dependent on compliant and non-compliant caregivers/mothers,  $F(2.197) = 9.10, P < 0.0005$ ; Wilk's  $\Delta = 0.916$  and  $F(3.196) = 12.55, P < 0.0005$ ; Wilk's  $\Delta = 0.839$ .



		Value	F	Hypothesis df	Error df	Sig.
<b>Compliant and noncompliant</b>	<b>Pillai's Trace</b>	.084	9.087 <sup>b</sup>	2.000	197.000	.000
	<b>Wilks' Lambda</b>	.916	9.087 <sup>b</sup>	2.000	197.000	.000
	<b>Hotelling's Trace</b>	.092	9.087 <sup>b</sup>	2.000	197.000	.000
	<b>Roy's Largest Root</b>	.092	9.087 <sup>b</sup>	2.000	197.000	.000
<b>Compliant and noncompliant</b>	<b>Pillai's Trace</b>	.161	12.548 <sup>b</sup>	3.000	196.000	.000
	<b>Wilks' Lambda</b>	.839	12.548 <sup>b</sup>	3.000	196.000	.000
	<b>Hotelling's Trace</b>	.192	12.548 <sup>b</sup>	3.000	196.000	.000
	<b>Roy's Largest Root</b>	.192	12.548 <sup>b</sup>	3.000	196.000	.000

Table 7: Statistically significant effects on compliance and non-compliance

- a. Design: Intercept + Compliant and non-compliant
- b. Exact statistic

4.4.4 An analysis of test between-subjects of MANOVA for knowledge and importance between compliance and non-compliance.

Table 7 above shows that knowledge and importance had a statistically significant effects on compliance and non-compliance ( $F(1,198) = 17.24; P < .0005$ ) and ( $F(1,198) = 13.87; P < .0005$ ), respectively. Additionally, the table also shows that perception of improvement in weight gain with supplements and ease of collection of supplements had no statistically significant effect on compliance and non-compliance ( $F(1,198) = 0.340; P > .0005$ ) and ( $F(1,198) = 1.198; P > .0005$ ), respectively. However, factors preventing caregivers/mothers from collecting supplements had a statistically significant effect ( $F(1,198) = 33.099; P < .0005$ ) on compliance, and non-compliance.

Source	Dependent variable	Type III Sum of squares	df	Mean square	F	Sig
<b>Corrected Model</b>	<b>Knowledge</b>	3.595 <sup>a</sup>	1	3.595	17.244	.000
	<b>Importance</b>	2.502 <sup>b</sup>	1	2.502	13.868	.000
<b>Intercept</b>	<b>Knowledge</b>	969.595	1	969.595	4650.679	.000
	<b>Importance</b>	984.762	1	984.762	5458.896	.000
Compliant and noncompliant	Knowledge	3.595	1	3.595	17.244	.000
	Importance	2.502	1	2.502	13.867	.000
<b>Error</b>	<b>Knowledge</b>	41.280	198	.208		
	<b>Importance</b>	35.718	198	.180		
<b>Total</b>	<b>Knowledge</b>	1641.000	200			
	<b>Importance</b>	1640.000	200			
<b>Corrected Total</b>	<b>Knowledge</b>	44.875	199			
	<b>Importance</b>	38.220	199			
<b>Corrected Model</b>	<b>Does supp improve wt</b>	.099 <sup>a</sup>	1	.099	.340	.561
	<b>How easy to collect</b>	.952 <sup>b</sup>	1	.952	1.220	.271
	<b>Factors preventing to collect</b>	149.365 <sup>c</sup>	1	149.365	33.099	.000
<b>Intercept</b>	<b>does supp improve wt</b>	1010.319	1	1010.319	3454.943	.000
	<b>easy to collect supp</b>	385.532	1	385.532	494.181	.000



	<b>Factors preventing to collect</b>	1939.085	1	1939.085	429.697	.000
<b>Compliant and non-compliant</b>	<b>Does supp improve wt</b>	.099	1	.099	.340	.561
	<b>Easy to collect supp</b>	.952	1	.952	1.220	.271
	<b>factors preventing to collect supplements</b>	149.365	1	149.365	33.099	.000
<b>Error</b>	<b>Does supp improve wt</b>	57.901	198	.292		
	<b>Easy to collect supp</b>	154.468	198	.780		
	<b>Factors preventing to collect</b>	893.510	198	4.513		
<b>Total</b>	<b>Does supp improve wt yes</b>	1626.000	200			
	<b>Easy to collect supp</b>	782.000	200			
	<b>Factors preventing to collect</b>	3123.000	200			
<b>Corrected Total</b>	<b>Does supp improve wt</b>	58.000	199			
	<b>Easy to collect supp</b>	155.420	199			
	<b>Factors preventing to collect</b>	1042.875	199			

\*wt – weight

\*supp - supplement

Table 8: Test between the subject effect of MANOVA for knowledge and importance between compliance and non-compliance.

- a. R Squared = .080 (Adjusted R Squared = .075)
- b. R Squared = .065 (Adjusted R Squared = .061)
- a. R Squared = .002 (Adjusted R Squared = -.003)
- b. R Squared = .006 (Adjusted R Squared = .001)
- c. R Squared = .143 (Adjusted R Squared = .139)

**4.5. PARTICIPANTS OPINION ON HOW TO IMPROVE COMPLIANT TOWARDS OTP AND NSP**

Of the 200 participants, 74 (37%) suggested a reminder (text message, call, WhatsApp) would enhance compliance 75 (38%) suggested that there should be transport organised from the PHC, 4 (2%) suggested thorough education about the OTP and NSP, and 44 (22%) made other suggestions such as: prefer PHC/mobile clinic close to home, supplements to be collected by CCG’s and delivered to them at their homes, prefer two months/bulk supply of supplements and a transfer letter to the nearest CHC/ district hospital. The results of the suggested improvements towards OTP/NSP are displayed in the Figure 5 below.

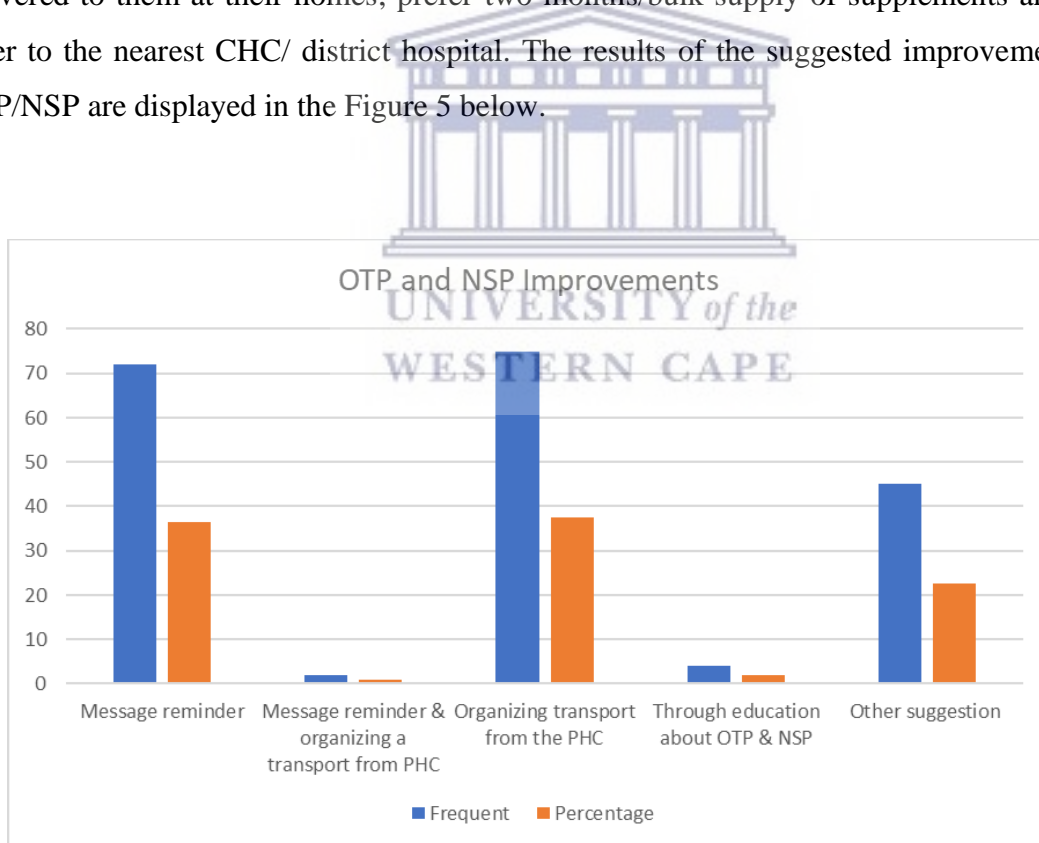


Figure 5: Suggested improvements towards OTP/NSP

## CHAPTER 5: DISCUSSION AND LIMITATIONS OF THE STUDY

### 5.1 INTRODUCTION

An important finding of the study was that only 20% were non-compliant and 87% considered themselves as having good knowledge. This quantitative study also found that the factors affecting compliance towards OTP/NSP could be sub divided into socio economic factors, being (i) socioeconomic factors; (ii) psychosocial factors and (iii) other reasons for non-compliance. Additionally, the research had several limitations that contributed to the outcome of the results. The section will now discuss the factors below.

### 5.2 DISCUSSION

#### 5.2.1 Socio-economic factors

The research assessed the mother or caregiver's age, monthly income and residence i.e. proximity to the hospital, against their compliance to the programmes. The mother's age and knowledge had a statistically significant linear relationship. Additionally, the mother's age and knowledge were negatively correlated. This meant that an increase in mother's age was associated with a decrease in knowledge regarding OTP/NSP. Where there was a decrease in knowledge, this increased the chances of non-compliance or potential defaulting. This was correct as most of the older caregivers/mothers were not always sure why their children were receiving OTP/NSP supplements. This shows that limited knowledge regarding OTP/NSP greatly affects the quality of care that caregivers or mothers are able to give to their children. Similar results were also shown by Mbogo et al. (2020) who stated that the role of carers is critical in managing acute malnutrition.

Regarding income, the KZN Report (2011) placed majority of the earning bracket between R1000 and R3500 for people residing within the research area. This is synonymous with the finding that families living on the poverty line or who are under financial strain, are less likely to have extra finances to spare for transport costs to and from the hospital to receive supplements. The results also showed that the closer a mother stayed to the hospital, the more likely she was to be compliant,

because close proximity eliminates/covers the gap of transport costs. A greater distance to the hospital has a transport cost implication which most caregivers were not in a position to undertake.

### 5.2.2 Psychosocial factors

The psychosocial factors that were investigated consisted of the mother's good knowledge of OTP/NSP, the perception of importance of OTP/NSP, and whether the mothers saw weight gain in their children.

There is a correlation in the percentage of participants that had good knowledge about the programme (86.5%) who rated the programme important (85%), and those who felt that the programmes have improved their child's weight (86.5%). Again, this is consistent with the literature from Mbogo et al. (2020) which emphasizes the crucial role of the care giver and the importance in managing acute malnutrition in a community-based model.

There was a direct positive correlation between mothers who recorded weight gain in their children, and their perception of the importance of the programme. Mothers whose children experienced weight gain perceived the programmes to be important. Whether this perception only developed after the fact, or was present even before the fact, was not determined. Where weight gain was not recorded in the child, a potential contributing factor could have been that the supplements could have been shared among other children where some of the households experienced a challenge of food insecurity. This is not a far-fetched possibility as the KZN Report of 2011 revealed the general low socio-economic status of the study area.

The perception of the importance of the programme was affected largely by the knowledge and level of education of the caregiver. Caregivers who were able to collect the supplements with ease and had the means to do so, would also default when they lacked the knowledge on the importance of the programmes. Akparibo, et al. (2017) found that some caregivers were not aware that their children were sick to begin with, and so did not see the importance of the programme. This additionally contributed to their reasons for defaulting. Drawing from this research, and the results of Akparibo and others, it is evident that a prevailing factor for non-compliance is a lack of good knowledge and understanding by the caregiver, of the OTP and NSP programmes.

### 5.2.3 Reasons for defaulting

The results have shown that 40% had no reason for defaulting. This is inconsistent with the default rate depicted in Mbaya et al. (2015) which fell at 2.9% and was well within the acceptable international standards (<15%). This result suggests a host of other issues surrounding the defaulting. The most prevalent reason explaining this high percentage could be the lack of knowledge regarding the importance of adhering to the programmes for their entire duration. Additionally, Akparibo, et al. (2017) found that reasons for defaulting were: the travelling distance to sites, family illness, other commitments, other household priorities, poor community sensitization, and no household follow-up by community care givers (CCGs). These reasons for defaulting furnished in Akparibo et al. (2017) coincide largely with those of this research.

On the other hand, the results in Mbogo et al. (2020) for research conducted in refugee camps in Kenya showed that there were no defaulters. This may be due to the community-based approach which they used in the refugee camps, as well as the rigorous follow-up component which was part of their study. An outpatient therapeutic feeding programme (OTFP) was situated at each camp. This made it easy for the carers to access the feeding stations, and to gradually gain the necessary knowledge and information about the importance of the programme.

Wilunda et al. (2021) also note the value of a community-based approach by administering the programmes through trained health workers. The authors stated that this is a more efficient service delivery model for beneficiary communities and also allows for engagement with them. The justifications given for decentralizing the programmes into the community, are the following:

- (i) Health facilities with units for treatment of malnutrition are often located in towns, creating problems with access to care due to long distances from households to health facilities and between health facilities;
- (ii) Weak links between the community and facilities in referring malnourished children, and indirect costs;
- (iii) Health system constraints such as staff shortages, limited training and supervision, and lack of necessary equipment and ready to use foods that hamper the management of acute malnutrition (Wilunda, e al., 2021).

The justifications listed above, drawn from a study held in Tanzania – support the results of this study in Pietermaritzburg. They can be used in recommending a more community-based approach, as well as justify the need to train and integrate community health workers into the national health system. It was additionally stated that innovative delivery strategies in Tanzania, more particularly through community-based delivery platforms—for the scale-up of SAM services were seen as an urgent need (Wilunda et al., 2021; 2).

The presence and availability of community health workers stationed within the communities would address the issue of transportation costs, and potentially knowledge gaps among carers – where the community health workers are trained well. Once the knowledge gaps are dealt with positively, this could have a positive impact on the resultant engagement and participation of carers. This could also see an improvement and reduce the percentage of defaulting.

## 5.2 STUDY LIMITATIONS

During the data collection period there were some days that the researcher did not get participants within the age group. Additionally, this study did not include relapses. The study also did not distinguish non-compliant participants and defaulters within non-compliance category as it was a smaller study; only large studies could analyse the difference between these 2 groups. There might have been a selection bias in the non-compliant group in this study. The mothers/caregivers in the compliant group were in various stages of attending OTP and NSP, thus it is possible that some could have become non-compliant later. An additional limitation was that the study also did not calculate the results of the rate of weight gain per child. The questionnaire only recorded whether there was or was not weight being gained by the child. The study was done during the COVID-19 pandemic which could also have contributed to number of mothers/caregiver's being non-compliant, due to fear of being exposed to COVID, and other factors such as nation-wide lockdowns and restricted hospital visits.

## CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

### 6.1 SUMMARY OF THE RESEARCH

The study showed that there are many factors contributing towards poor compliance with OTP/NSP. Travelling distances, expenses, and knowledge regarding OTP/NSP and its importance were the main contributors. This study also proved that mothers/caregivers who were receiving OTP/NSP supplements were from poor economic backgrounds which supports existing literature. The knowledge of the caregivers/mothers regarding OTP/NSP was also related to their level of schooling, not the education received during the enrolment of the children to OTP/NSP. It was also seen that the higher the level of education the better the understanding of both programmes and their importance. It was also seen that some mothers/caregivers defaulted due to attending their registration at the various colleges. Additionally, to travelling cost 53% of the mothers/caregivers indicated that it was not easy to come and collect the supplement. Thus, indicating that the distance from the hospital and their residence could have been more.

Mothers/caregivers were given an opportunity to provide their opinion on how to improve compliance towards OTP/NSP. Many mentioned they will prefer the reminder prior to the collection date in the form of either a text message/phone call or WhatsApp messages. They also mentioned having transport provided by the PHC. This method of transporting patients is currently available around the study area although it's not practice by many PHCs. Some mothers/caregivers mentioned preferring to be down referred to the local PHC/CHCs. Although this is possible, the KZN IMAM guidelines clearly stipulates those children with SAM should only be treated with hospital management for closer observation. However, once the child progress to MAM the arrangements can be made for the child to be treated at the PHC/CHC level.

### 6.2 CONCLUSION

The findings of the study have important implication for OTP/NSP interventions in the uMgungundlovu district. This study found that reducing traveling cost by either down referring to the PHC/CHC or delivering nutrition supplements door-to-door by the use of CCGs could



improve the compliance. Although, door to door might be impossible, strengthening the current existing mobile clinics' services may be an effective way of improving compliance towards OTP/NSP. Additionally, improving the education of caregivers/mothers, their families and general population regarding the purpose and importance of OTP/NSP may also improve compliance.

### 6.3 RECOMMENDATIONS

- The district needs to re-look the current guidelines and maybe allow stable SAM patients to continue management at the PHC level. These patients can then be reviewed twice a week by the outreach team from the hospital in order to decrease the travelling cost for mother/caregivers.
- The government sectors including stakeholders should improve community strengthening of understanding malnutrition.
  - The government should improve the mode of transport between the hospital and the PHC, ensuring that the current transport is accessible daily. In the case where the clinic is still too far from the communities, there should be transport to collect them around any allocated or identify location where it would be easier for them to be collected.
  - Community forums could also be used as a platform to educate communities about OTP/NSP, and why it is important to be compliant to such programmes.
- Media platforms in the form of TV and radio can be used to deliver education about OTP/NSP.
- The health sector should improve PHC service delivery to the poor urban and rural household by:
  - Door-to-door campaign on malnutrition and OTP/NSP and why they are important.
  - Educating mothers/caregivers of children 0 to 59 months on malnutrition and its treatment and encourage them to pay regular visits to the local clinics. They should be orientated on how to care for a malnourish child in their community.

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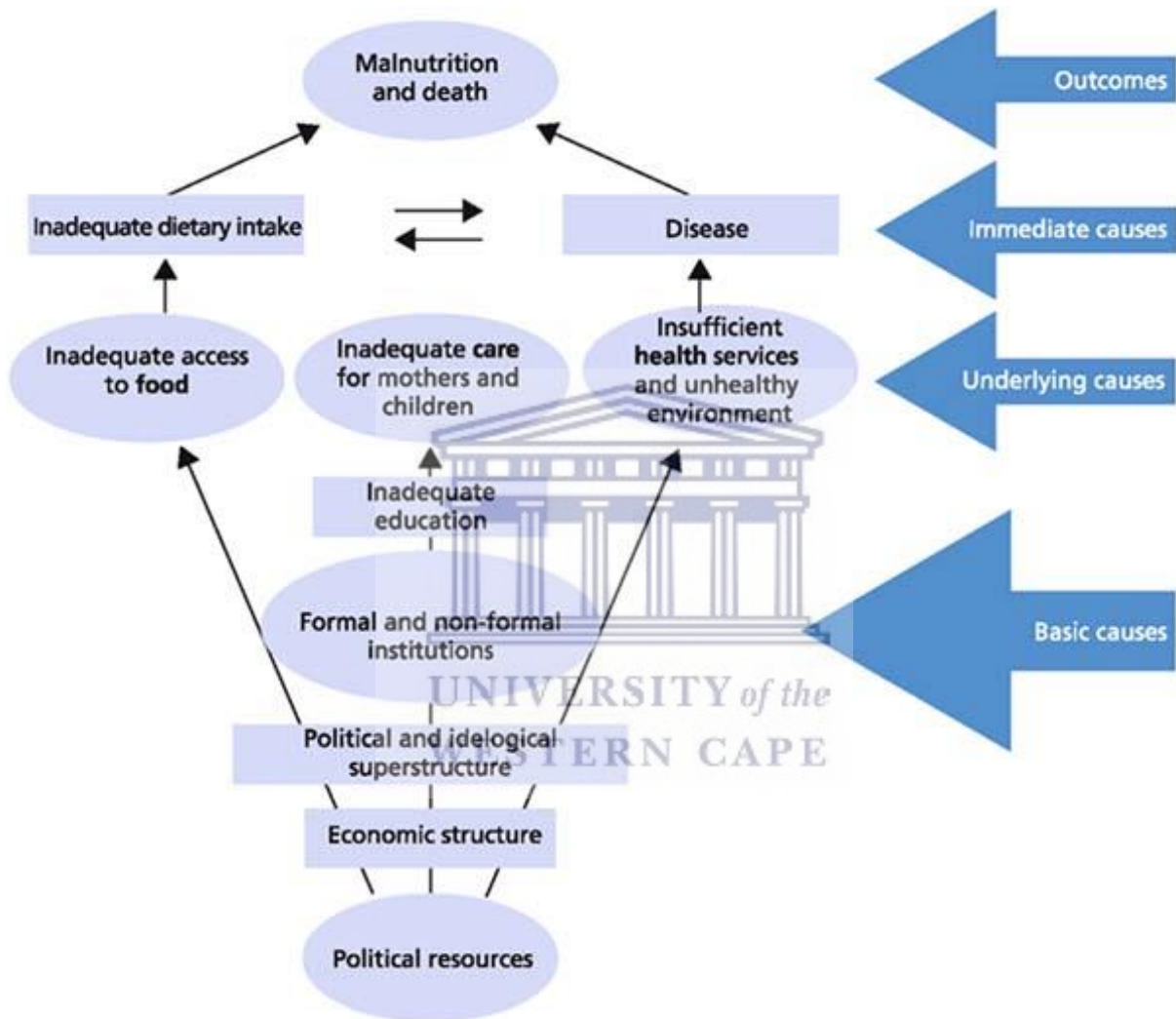
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## APPENDICES

### APPENDIX 1: UNICEF conceptual framework for causes of malnutrition (UNICEF 2006)



## APPENDIX 2: OTP supplement category

### Age 6 – 11 Months: OSP – Fortified Infant Cereal & RUTF

Children in this category normally have a dietary deficit in the home diet of 50%. The supplementation is thus based on assuming a home diet consumption of 50kcal / kg / day, and additional 25kcal / kg / day required for growth and deposition of new lean body tissue. Supplement is to provide additional 75kcal / kg / BW per day.

The average weight was taken in each category to calculate kcal requirements.

Dietary advise would be to use infant cereal independently and add RUTF to other home foods.

	Infant Cereal (IC) Daily	RUTF Daily	Monthly
4.0 – 4.9kg 338kcal / day	50g 120kcal	3 tsp (45g) 236kcal	6 x 250g boxes IC 3 x 450g RUTF
5.0 – 6.9kg 450kcal / day	50g 120kcal	4tsp (60g) 315kcal	6 x 250g box IC 4 x 450g RUTF
7.0 – 9.9kg 638kcal / day	50g 120kcal	7 tsp (105g) 551kcal	6 x 250g box IC 7 x 450g RUTF

### Age 12 – 59 Months: OSP – Enriched Maize Meal (EMM) and RUTF

	EMM Daily	RUTF Daily	Monthly
4.0 – 4.9kg 338kcal / day	50g 179kcal	2 tsp (30g) 156kcal	2 x 1kg pkt EMM 2 x 450g RUTF
5.0 – 6.9kg 450kcal / day	50g 179kcal	4tsp (60g) 315kcal	2 x 1kg pkt EMM 4 x 450g RUTF
7.0 – 9.9kg 638kcal/ Day	100g 358kcal	4 tsp (60g) 315kcal	4 x 1kg pkt EMM 4 x 450g RUTF
10.0 – 14.9kg 938kcal / day	150g 537kcal	5 tsp (75g) 394kcal	5 x 1kg pkt EMM 5 x 450g RUTF
15.0 – 19.9kg 1275kcal / day	150g 537kcal	8 tsp (120g) 630kcal	5 x 1kg pkt EMM 8 x 450g RUTF



### APPENDIX 3: Information sheet



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#### Information sheet

**Project Title:** Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

#### What is this study about?

This is a research project being conducted by Likhabiso Makhaye at the University of the Western Cape. We are inviting you to participate in this research project because you meet inclusion criteria for this study since you have a child between ages of 6 to 59 months receiving OTP and NSP at EDH, Pietermaritzburg, KZN. The purpose of this research project is to describe the factors affecting compliance among mothers/caregivers of malnourished children, aged 6-59 months, attending outpatient nutrition support programme at in Pietermaritzburg, KwaZulu-Natal.

#### What will I be asked to do if I agree to participate?

You will be asked to participate in face-to-face interview which will be conducted at Dietetics outpatient department at EDH. The interview will take approximately 15 minutes while you are waiting in the queue to be consulted by the dietitian. Questions about what you perceive to be barriers to comply with the OTP and NSP and suggestions on what you think can be done to improve the compliance. The interview will take 10-15 minutes and I will be using a questionnaire to ask question and write down your answers. There is no anticipated harm in participating in this study.

#### Would my participation in this study be kept confidential?

The researcher undertakes to protect your identity and the nature of your contribution. To ensure your confidentiality, care will also be taken during the data collection, data management, data analysis and results dissemination. To help protect your confidentiality, your name will not be

included in a questionnaire, but a code will be used as identification. Thus, the researcher will be able to link your survey to your identity through coding known by the researcher only.

To ensure your confidentiality, the collected information from you will be kept in a lockable cabinet and the data will be entered on the computer that is password-protected. If we write a report or article about this research project, your identity will be protected to the maximum extent as possible.

### **What are the risks of this research?**

There may be some minimum risks from participating in this research study. Such as questions that will be asked might be emotional such as affordability of coming to the hospital and source of income. Thus, the area of finances and affordability will be touched which might be sensitive to talk or elaborate on. All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

### **What are the benefits of this research?**

This research is not designed to help you personally, but the results may help the investigator learn more about the factors that affect compliance towards OTP and NSP and how it can be improved to minimize these factors. We hope that, in the future, other people might benefit from this study through improved understanding of importance of complying with OTP and NSP.

### **Do I have to be in this research, and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. If you experience any negative impact from participating counselling will be provided.

### **What if I have questions?**

This research is being conducted by Likhabiso Makhaye, master's in public health nutrition at the University of the Western Cape. If you have any questions about the research study itself, please contact: Likhabiso Makhaye , Cell: 0729669264, Email: [3816947@gmail.com](mailto:3816947@gmail.com)

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact my supervisor:

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## APPENDIX 4: Ishidi lemininingwane



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### Ishidi lemininingwane

**Isihloko sephrojekthi:** Izinto ezenza abazali kanye nabagadi bezingane ezinesifo sendlala ezinezinyanga eziwu 6-59 ukuthi bathobebe ukuza ukozothola usizo nge Outpatient Nutrition Support Programme ePietermaritzburg/Mgungundlovu Kwazulu Natal.

### Yini lolu cwaningo mayelana?

Lona wuphrojekthi locwaningo olwenziwe nguLikhabiso Makhaye e-University of the Western Cape. Sikumema ukuthi ubambe iqhaza kulu msebenzi wokucwaninga ngoba uhlangabezana nezindlela zokufaka lolu cwaningo njengoba unengane eneminyaka ephakathi kwezinyanga eziyisithupha kuya kweziyi-59 ithola i-OTP ne-NSP kwa-EDH, eMgungundlovu, Ekzn. Inhloso yale phrojekthi yocwaningo ukuchaza izinto ezithinta ukuhambisana kokutholwa kwabomama kanyenabanakekeli bezingane ezingondlekile, abaneminyaka ephakathi kwengu-6 kuya-59, nokuya ohlelweni lokwesekwa kwabondli abangaphandle eMgungundlovu, KwaZulu-Natali.

### Ngizocelwa ukuthi ngenzeni uma ngivuma ukubamba iqhaza?

Uzocelwa ukuthi ubambe nobuso ezizokwenziwa emnyangweni wezezifo zokudla ezikhungweni zesifunda esibhedlela. Ingxoxo kuzothatha imizuzu ecishe ibe ngu-15 ngenkathi ulinde kulayini ukuthi kuboniswane nabadliwayo. Imibuzo mayelana nokuthi yini oyibona njengezithiyo ukuze uhambisane ne-OTP ne-NSP neziphakamiso kulokho ocabanga ukuthi kungenziwa ukwenza ngcono ukuhambisana. Ingxoxo izothata imizuzu eyi-10-15 kanti ngizobe ngisebenzisa iphepha lemibuzo ukubuza umbuzo bese ngibhala izimpendulo zakho. Akukho ukulimala obekulindelwe ukubamba iqhaza kulolu cwaningo.

### Ngabe ukubamba iqhaza kwami kulolu cwaningo kuzogcinwa kuyimfihlo?

Abaphenyi bathembela ukuvikela ubunikazi batho kanye nohlobo lomnikelo wakho. Ukuqinisekiza ubumfihlo bakho, ukunakekelwa kuzothathwa ngesikhathi sokuqoqwa

kwedatha, ukuphathwa kwedatha, ukuhlaziya idatha nokusakazwa kwemiphumela. Ukusiza ukuvikela ubumfihlo bakho, igama lakho ngeke lifakwe kuhlu lwemubuzo, kepha ikhodi izosetshenziswa njengophawu lwentengiso. Ngakho-ke, umcwaningi uzokwazi ukuxhumanisa inhlolovo yakho nobunikazi bakho ngokusebenzisa amakhodi owaziwz ngumcwaningi kuphela.

Ukuqinisekisa ubumfihlo bakho, imininingwane eqoqwe kusuka kuwe izogcinwa kwikhabethe elinokhiyeka futhi imininingwane izofakwa kukhompuyutha evikelkwe nge-password. Uma sibhala umbiko noma i-athikili mayelana nale projekthi yocwaningo, ubunikazi bakho buzovikelwa kakhulu ngangokunokwenzeka.

### **Yiziphi izingozi zalolu cwano?**

Kungale kube nobungozi obuncane bokubamba iqhaza kulolu cwano lokucwaninga. Ezinjengemibuzo ezobuzwa ingaba yimizwa efana nokukwazi ukufika esibhedlela nomthombo wemholo. Ngakhoke, indawo yezimali nokukwazi ukutholakala kuzothintwa ezingaba buthaka ukukhuluma noma ukugcizelela. Konke ukuhlangana kwabantu nokukhuluma ngabo noma abanye bathwala izingozi ezithile. Kotwa-ke, sizonciphisa izingozi ezinjalo futhi senze ngokushesha ukukusiza uma uhlangabezana nanoma yikuphi ukungakhululeki, ngokwengqondo noma ngenye indlela ngesikhathi sokubamba kwakho iqhaza kulolu cwano. Lpho kunesidingo, kudluliselwa okufanelekile kochwepheshe ofanelekile ukuthola usizo noma ukungenelela okwengeziwe.

### **Yini imihlomulo yalolu cwano?**

Lolu cwano alwenzelwe ukukusiza wena uqobo, kepha imiphumela ingasiza umseshi ukuthi afunde kabanzi ngezinto ezithinta ukuhambisana ne-OTP ne-NSP nokuthi kungenziwa kanjani ukuthi kuncishiswe ukunciphisa lezi zinto. Siyethemba ukuthi, ngokuzayo, abanye abantu bangahlomula kulolu cwano ngokuqonda okuthuthukile kokubaluleka kokuhambisana ne-OTP ne-NSP.

### **Ngabe kufanele ngibe kulolu cwano, futhi ngingahle ngiyeke ukubamba iqhaza noma nini?**

Ukubamba iqhaza kwakho kulolu cwano kungokuzithandela ngokuphelele. Ungase ukhethe ukungabambiqhaza nakancane. Uma uthatha isinqumo sokubamba iqhaza nganoma yisiphi isikhathi. Uma uthatha isinqumo sokungahlanganyeli kulolu cwano noma uma uyeka ukubamba iqhaza nganoma yisiphi isikhathi, ngeke uthole inhlawulo noma ulahlekelwe yinzuzo ethile efanelekile. Uma uhlangabezana nanoma yimuphi umthelela omubi ovela ekululekeni okubandakanya ukubonisana uzonikezwa.

### **Ngenzenjani uma ngenemibuzo?**

Lolu cwaningo lwenziwa nguLikhabiso Makhaye, umphathi wezempilo yomphakathi e-University of Western Cape. Uma unemibuzo mayelana nocwaningo uqobo, sicela uthinte:

**Likhabiso Makhaye, Cell: 0729669264; Email: [3816947@gmail.com](mailto:3816947@gmail.com)**

Uma kwenzeka unemibuzo mayelana nalolu cwaningo kanye namalungelo akho njengomhlanganyeli ocwaningweni noma uma ufisa ukubika noma yiziphi izinkinga ohlangabezana nazo eziphatherlene nalolu cwaningo, sicela uthinte umphathi wami:

**Dr N Solomons**

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**L Makhaye**

**Department of Dietetics Edendale hospital**

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## APPENDIX 5: Foromo ya tlhahiso leleding



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### Foromo ya tlhahiso leleding

**Sehloho sa morero:** Dintho tse amang ho latela bomme le bahlokomedi ba bana ba nang le phepo e sa nepahalang ba dikgwedi tse 6-59 ho lenaneo la tshebetso ya phepo e nthle Pietermaritzburg, Kwazulu-Natal

### Thuto ee e bua ka eng?

Ona ke morero wa dipatlisiso o ntseng o etswa ke Likhabetso Makhaye Univesithing ya Western Cape. Re o mema hore o kenye letsoho morerong ona wa dipatlisiso hobane o kopana le dintlha tsa ho kenyelletsa thuto ena ho tgloha ha o na le ngwana ya pakeng tsa dikgwedi the 6 ho isa ho tse 59 a fumana tshebeletso tsa OTP and NSP, Pietermaritzburg, KwaZulu-Natal. Morero wa morero ona wa ho ets dipatlisiso ho hlalosa dintlha tse amang ho latela bomme le bahlokomedi ba bana ba sa fepeheng hantle, yta nang le kgwedi tse 6 ho ya ho tse 59, ho ba teng lenaneong la tshehetso ya phepo e ntle ho la Pietermaritzburg, KwaZulu-Natal.

### Ke tla kupa ho etsa eng haeba ke dumela ho nka karolo?

O tla kupa ho nka karolo puisanong ya efahleho ho sefahleho e tla tshwarelwa lefapheng la dijo tsa bana sepetle. Puisano e tla nka metsotso e kabang 15 ha o ntse o emetse ho tla botswa dipotso ka phepo. Dipotso mabapi le seo o bonang e tliisa ditshitiso tsa ho latela OTP le NSP le ditlhahiso mabapi le seo o nahanang hore se ka etswa ho ntlafatsa tshebetsong. Puisano e tla nka metsotso e 10-15 mme ke tla be ked sebelisa dipotso tse hlophisitsweng ho botsa dipotso tse hlophisitsweng ho botsa dipotso le ho ngola dikarabo tsa hao. Ha ho na bohloko bo lebelletsweng ho nka karolo dipatlisisong tsena.

### Ngabe ukubamba iqhaza kwami kulolu cwaningo kuzogcinwa kuyimfihlo?

Bafuputsi ba ikemiseditse ho sireletsa boitsebiso ba hao le mofuta wa monehelo wa hao. Ho netefatsa sephiri sa hao, tlhokomelo e tla boela e nkuwe nakong ya pokello ya data, taolo ya data, tlhahlobo ya data le sepheo sa ho tsamaiswa. Ho thusa ho sireletsa makunutu a hao, le bitso la hao

le ke ke la kenyelletswa potso, empa khoutu e tla sebediswa e le tlhaiso. Kahoo, mofuputsi o tla kgona ho hokahanya phuputso ya hao le boitshebahatso ba hao ka ho fana ka dikhoutu tse tsejwang ke mofuputsi feela.

Ho netefatsa sephiri sa hao, tlhahisoleseding e bokelletsweng ho tswa ho wena e tla bolokwa ka khaboteng e notlellwang mme dintlha di tla kenywa ka hara komporo e sireleditsweng ka password. Haeba re ngola tlaleho kapa sengolwa ka morero ona wa dipatlisiso, boitsebahatso ba hao bo tla sireletswa ka hohle kamoo ho ka kgonehang.

### **Dikotsi tsa dipatlisiso tsee ke dife?**

Ho ka ba le dikotsi tse fokolang tsa ho nka karolo ho itthuteng hona. Jwalo ka dipotso tse tla botswa e kanna ya ba le maikutlo a jwalo ka menyetla ya ho fihla sepetlele le mohlodi wa tjhelete. Kahoo, sebaka sa ditjhelete le theko e tlase se tla ameha se ka amehang ho bua kapa ho hlakisa. Ditshebedisano tsohle tsa batho le ho bua ka boithati kapa tse ding di na le dikotsi tse itseng. Le ha ho le ha ho le jwalo re tla fokotsa dikotsi tse jwalo mme re nke bohato hang-hang ho o thusa haeba o e-ba le mathata, maikutlong kapa nakong yakarolo ya hao ya thuto ena. Moo ho hlokaahalang, ho fetisetwa ho loketseng ho tla etswa ho setsebi se loketseng bakeng sa thuso e eketsehileng kapa ho kenella.

### **Melemo ya dipatlisiso tsee ke efe?**

Patlisiso ena ha e etseditswe ho u thusa, empa diphetho di ka thusa mofuputsi ho ithusa mofuputsi ho ithuta haholwanyane ka dintlha tse amang ho dumellana le OTP le NSP le hore na a ka ntlafatswa jwang ho fokotsa dintlha tsena. Rea tshepa hore, nakong e tlang, batho ba bang ka rua molemo thutong ena ka kutlusiso e ntlafaditsweng ya bohlokwa ba ho latela OTP le NSP.

### **Na ke tlameha ho ba dipatlisisong tse, mme na nka emisa ho nka karolo nako efe kapa efe?**

Ho nka karolo ha hao dipatlisisong tsena ho ithaopa ka boithatelo. O ka kgetha ho se nke karolo ho hang. Haeba o nka qeto ya ho nka karolo dipatlisisong tsens, o ka emisa ho nka karolo nako

### **Ho thweng haeba ke ena le dipotso?**

Patlisiso ena e etswa ke Likhabetso Makhaye, setsebi sa phepo ya bophelo bo botle Univesithing ya Western Cape. Haeba o na le dipotso ka boithuto ka bohona, ka kopo ikopanye le: Likhabetso Makhaye, Cell: 0729669264; Email: [3816947@gmail.com](mailto:3816947@gmail.com)

Haeba o na le dipotso mabapi le thuto ena le ditokelo tsa hao jwalo ka motho ya nkang karolo ya dipatlisiso kapa haeba o lakatsa ho tlaleha mathata afe kapa afe ao o bileng le ona a amanang le thuto, ka kopo ikopanye le mookamedi wa ka:

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**APPENDIX 6: Consent form**



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**CONSENT FORM**

**Title of Research Project:** Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

\_\_\_\_\_ I agree to be interviewed face-to-face during my participation in this study.

**Participant's name.....**

**Participant's signature.....**

**Date.....**

**Biomedical Research Ethics Committee**

**University of the Western Cape**

**Private Bag X17**

**Bellville**

**7535**

**Tel: 021 959 4111**

**E-mail: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)**

## APPENDIX 7: Ifomu lokuvuma



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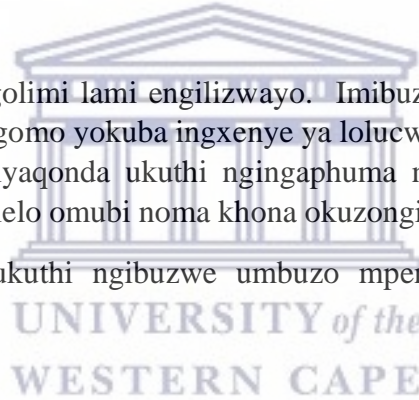
**E-mail: [3816947@uwc.ac.za](mailto:3816947@uwc.ac.za)**

### Ifomu lokuvuma

**Isihloko sепhrojekthi:** Izinto ezenza abazali kanye nabagadi bezingane ezinesifo sendlalaezinezinyanga eziwu 6-59 ukuthi bathobele ukuza ukozothola usizo nge Outpatient Nutrition Support Programme ePietermaritzburg/Mgungundlovu Kwazulu Natal.

Lolucwaningo ngiluchazelwe ngolimi lami engilizwayo. Imibuzo ebinginayo ngalolucwaningo iphenduliwe. Ngiyayiqonda imigomo yokuba ingxenye ya lolucwaningo, futhi ngiyavuma ukuba ingxenye yalolucwaningo. Ngiyaqonda ukuthi ngingaphuma nanoma inini futhi ngaphandle kokusaba ukuthi kuzoba nomthelelo omubi noma khona okuzongilahlekela.

\_\_\_\_\_ Ngiyavuma ukuthi ngibuzwe umbuzo mpendulo ngenkathi ngiyingxenye yalolucwaningo.



**Igama lakho.....**

**Sayina.....**

**Usuku .....**

**Biomedical Research Ethics Committee**

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**7535**

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## APPENDIX 8: Foromo ya tumellano



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### Foromo ya tumellano

**Sehloho:** Dintho tse amang ho latela bomme le bahlokomedi ba bana ba nang le phepo e sa nepahalang ba dikgwedi tse 6-59 ho lenaneo la tshebetso ya phepo e nthle Pietermaritzburg, Kwazulu-Natal.

Boithuto bona bo hlalositse ka puo eo ke e utlwisisang. Dipotso tsa ka maabapi le thuto di arabilwe. Ke utlwisisa hore na ho nka karolo ha ka tla am eng, mme ke dumela ho nka karolowa boikhetlo ba ka le bolokolohiba ho ikhethela. Ke a utlwisisa hore boitsebiso ba ka bo ke ke hba tsebiswa mang ka pa mang. Ke a utlwisisa hore nka tlohela ho ithuta ka nako e fe nthle le ho fana ka lebaka le nthle le ho tshaba ditlamorao tse mpe kapa ho lahlehelwa ke melemo.

\_\_\_\_\_ Ke dumela ho {buisanwa le sefahleho} nakong ya ha ke nka karolo thutong ena.

**Lebitso la monka karololo.....**

**Saena .....**

**Letsatsi .....**

**Biomedical Research Ethics Committee**

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## APPENDIX 9: Research questionnaire



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### QUESTIONNAIRE

Code: \_\_\_\_\_

Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

#### A. Socio-demographic section

Mother/caregiver's age: \_\_\_\_\_ Age of the child \_\_\_\_\_  
sex of the child \_\_\_\_\_

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1. What is your Marital status?

Single		1
Married		2
Divorced		3
Separated		4
Living with partner		5
Other (specify)		6

2. What level of schooling did you complete?

No schooling		1
Primary		2

Secondary		3
College		4
University		5
Other (specify)		6

3. What is your monthly income?

< R1000\_\_\_\_\_ R1000-3500\_\_\_\_\_ >R3500\_\_\_\_\_

 1

 2

 3

4. Residence: Local\_\_\_\_\_ Non-local\_\_\_\_\_

 1

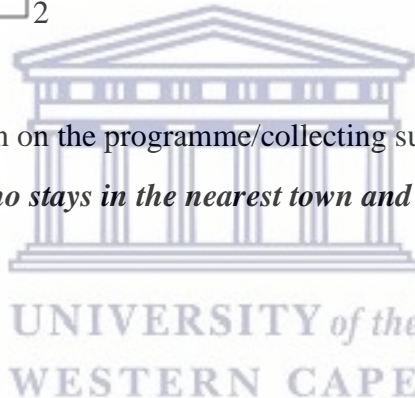
 2

5. How long has your child been on the programme/collecting supplements\_\_\_\_\_

*(Non-local patients are those who stays in the nearest town and had to take more than one taxi to come to the hospital)*

**B. Psychosocial section**

**OTP and NSP perception**



	Good 3	not sure 2	Not good 1
1. How would you rate your own knowledge of the OTP and NSP?			
2. How would you rate your own knowledge of the importance of OTP and NSP supplements?			
3. How would you rate your child's intake of :			
• RUTF			
• Enrich maize meal porridge			
• Cerelac			
• Nutrimil junior			



2. Organising patient transport days from PHC level \_\_\_\_\_  2
3. Thorough education about OTP and NSP \_\_\_\_\_  3
4. Other suggestions:  4
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

*Transport is part of existing system; therefore, patients could be booked on the same day that the clinic transport is available to bring patients at the hospital.*

**THANK YOU FOR YOUR TIME!**

**DATE OF INTERVIEW:** \_\_\_\_\_

**TIME OF INTERVIEW:** \_\_\_\_\_



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WESTERN CAPE

## APPENDIX 10: Umbuzo wokucwaninga



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**Umbuzo wokucwaninga**

**Ikhodi:** \_\_\_\_\_

Izinto ezenza abazali kanye nabagadi bezingane ezinesifo sendlalaezinezinyanga eziwu 6-59 ukuthi bathobele ukuza ukozothola usizo nge Outpatient Nutrition Support Programme ePietermaritzburg/Mgungundlovu Kwazulu Natal.

### **A. Isigaba sezenhlalo**

Iminyaka kamama/yabanakekeli: \_\_\_\_\_ Iminyaka yomntwana \_\_\_\_\_  
ubulili bemgane \_\_\_\_\_

#### **1. Isimo sakho somshado?**

Umuntu ongashadile		<b>1</b>
Eshadile		<b>2</b>
Isehlukano		<b>3</b>
Ahlukaniswe		<b>4</b>
Ukuhlala nomlingani		<b>5</b>
Abanye (chaza)		<b>6</b>

#### **2. Imfundo likamama/yomnakekeli?**

Ukungafundi		<b>1</b>
Okuyisisekelo		<b>2</b>
Okwesibili		<b>3</b>

Ekolishi		4
Eyunivesithi		5
Okunye(chaza)		6

3. Imali engenayo yomama/yomnakekeli?

< R1000 \_\_\_\_\_ R1000-3500 \_\_\_\_\_ >R3500 \_\_\_\_\_  
<sub>1</sub>                      <sub>2</sub>                      <sub>3</sub>

4. Indawo yokuhlala: Yasendaweni \_\_\_\_\_ Okungeyona eyasekhaya \_\_\_\_\_  
<sub>1</sub>                      <sub>2</sub>

5. Isenesikhathi esingakanani ingane yakho kuhlelo/iquqa izithasiselo \_\_\_\_\_

*(ziguli ezingezona ezendawoyilezo ezihlala edolobheni eliseduzane futhi bekumele zithathe amatekisi angaphezu kwelilodwa ukuza esibhedlela)*

**B. Isigaba sokusebenza kwengqondo**

**Umbono we-OTP ne-NSP**

	Kuhle= 3	A = 2 nginasiqiniseko	Akukuhle= 1
1. Kusukela ku-1 kuya ku-3; ungaluphayiphi inombolo ulwazi onalo mayelana ne-OTP kanye ne-NSP?			
2. Kusukela ku-1 kuya ku-3; ungaluphayiphi inombolo ulwazi onalo mayelana nokubaluleka kwa-OTP kanye ne-NSP?			
3. How would you rate your child's intake of:			
• RUTF			
• Enrich maize meal porridge			
• Cerelac			
• Nutrimil junior			

<ul style="list-style-type: none"> <li>• Infatrini</li> <li>• Infant formula</li> </ul>			
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4. Kungabe ngokwakho, OTP kanye ne NSP isizile ukukhuphulaisindo somntwana wakho? Yebo  kancane ngandlela thize  Cha   
3 2 1

**C. Izizathu ezenza abazali bangathobeli noma balandele ngokuthembeka ku-OTP kanye ne-NSP?**

1. Ngokubona kwakho kulula kangakananib ukuza uzoilandela umtwana?

Kulula kakhulu \_\_\_\_\_ Hayi kahle-hle \_\_\_\_\_ Akulula neze \_\_\_\_\_  
 1  2  3

2. Iziphi isizathu ezikuvimbela ukulandela umtwana ukudla?

Asikho isizathu: \_\_\_\_\_  1

Ngiyazikhohlwa izinsuku zokubuya: \_\_\_\_\_  2

Ngihamba ibanga elide: \_\_\_\_\_  3

Okunye okwasekhaya okubalulekile: \_\_\_\_\_  4

Ngazitshela ukuthi umtwana osesindile: \_\_\_\_\_  5

Ukungabinayoimaliyokuzaesibhedlela:  4

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**D. Ukuthuthuka kwe-OTP ne-NSP imibono yeziguli ezihambelanayo nezingahambelani.**

Yini engakusiza ukuthi ungene kuyo yonke i-OTP yakho kanye nokuqokwa kwe-NSP? (Khetha abaningi ngokuthanda kwakho).

1. Izikhumbuzi zemiyalezo zisebenzisa (text, calling and whatApp) \_\_\_\_\_  1



2. Ukuhlela izinsuku zokuguliswa kweziguli kusuka kumazinga e-PHC \_\_\_\_\_  2
3. Ngemfundo mayelana ne-OTP ne-NSP \_\_\_\_\_  3
4. Ezinyeiziphakamiso: \_\_\_\_\_  4  
\_\_\_\_\_  
\_\_\_\_\_

*Izinto zokuhamba ziyingxenye yohlelo olukhona ngakho-ke iziguli zazingabhukwa ngalo lolo suku ezotholwa ngalo umtholampilo ukuletha iziguli esibhedlela..*

**NGIYABONGA**

**ISIKHATHI SOCWANINGO:** \_\_\_\_\_

**USUKU LOCWANINGO:** \_\_\_\_\_



## APPENDIX 11: Dipotso tsa dipatlisiso



**UNIVERSITY OF THE WESTERN CAPE**  
Private Bag X 17, Bellville 7535, South Africa  
Tel: +27 21-9592809 Fax: 27 21-959 2872  
E-mail: [3816947@uwc.ac.za](mailto:3816947@uwc.ac.za)

### Dipotso

**Khoutu:** \_\_\_\_\_

Dintho tse hore bomme le bahlokomedi ba bana ba senang phepho e nepahetseng ba dilemo tsa kgedi tse 6-59 ba seke batla lenanneong la tsehetso ya phepo OTP le NSP kgafetsa sepetlele sa setereke sa PMB, Kwazulu-Natal.

#### A. Karolo ya setjhaba le setjhaba

Dilemo tsa bomme/bahlokomedi: \_\_\_\_\_ Dilemo tsa ngwana \_\_\_\_\_ Botona  
ba ngwana \_\_\_\_\_

1. Boemo ba hao ba lenyako ke bofe?

Lesoha		<b>1</b>
Tlhalo		<b>2</b>
Nyetswe		<b>3</b>
Arohane		<b>4</b>
Ho phela le motjhaufa		<b>5</b>
Ba bang (Hlakisa)		<b>6</b>

2. Maemo a hao a thuto ke afe?

Ha ho sekolo		<b>1</b>
Ya mantlha		<b>2</b>
Bobedi		<b>3</b>

Koleche		<b>4</b>
univesithi		<b>5</b>
Tse ding (Hlakisa)		<b>6</b>

3. Moputso wa hao wa kgwedi le kgwedi ke bokae?

< R1000\_\_\_\_\_ R1000-3500\_\_\_\_\_ >R3500\_\_\_\_\_

\_1                      \_2                      \_3

4. Bodulo:Lehae\_\_\_\_\_ Eseng ba lehae\_\_\_\_\_

\_1                      \_2

5. Ngwana wa hao o qetile nako e kae a le mosebetsing/ ho bokella dintho tse tlatsetsang

\_\_\_\_\_

*(Baahi ba kantle ke bao ba dulang ditorotswaneng tse kantle ho Pietermaritzburg hape ba pala diplamiswa tse fetang bonngwe ho tla sepetlele)*

UNIVERSITY of the  
WESTERN CAPE

## B. Karolo ya kelello

### OTP le NSP tlhokomediso

	Hantle 3	E seng hantle ntle 2	Ha mpe 1
1. O ka lekanya tsebo ya hao ya OTP le NSP jwang?			
2. O ka lekanya tsebo ya hao ya bohlokwa ba dijo tsa ho nyolla phepho tsa OTP le NSP jwang?			
3. Ho loha ho -1 ho ya ho -3; o ka efa e fe nomoro ya dijo tse latelang tsa ho nyolla phepho:			
• RUTF			
• Enrich maizemeal porridge			

<ul style="list-style-type: none"> <li>• Cerelac</li> <li>• Nutrimil junior</li> <li>• Infatrini</li> <li>• Infant formula</li> </ul>			

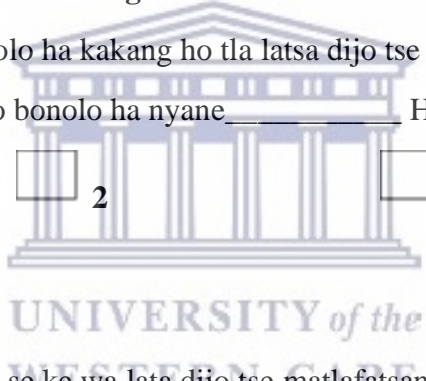
6. Ho ya ka wena, na OTP le NSP e entse phetoho boimeng ba ngwana wa hao?

Kennete \_\_\_\_\_ Ha nyane \_\_\_\_\_ Letho \_\_\_\_\_  
 3                       2                       1

**C. Mabaka a etsang hore o seke wa tla kgafetsa ho OTP le NSP.**

1. Ho ya ka wena, e kaba ho bonolo ha kakang ho tla latsa dijo tse matlafatsang?

Ho bonolo haholo \_\_\_\_\_ Ho bonolo ha nyane \_\_\_\_\_ Ho boima \_\_\_\_\_  
 1                       2                       3



2. Ke mabaka afe a etsang hore o se ke wa latsa dijo tse matlafatsang tsa ngwana?

Ha ho lebaka: \_\_\_\_\_  1  
Ke lebala matsatsi: \_\_\_\_\_  2  
Ho hole: \_\_\_\_\_  3  
Amang a mabaka a ntlong: \_\_\_\_\_  4  
Ne kere ngwana o sa fodile \_\_\_\_\_  5  
Ha ke na tjehelete ya ho tla: \_\_\_\_\_  6  
Tse ding tsa dintho (Hlalosa): \_\_\_\_\_  7

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**D. Ntlafatso ya OTP le NSP ho ya ka monahano wa hao.**


Ke eng e ka o thusang ho re matlafatse ho tla kgafetsa ho kopano ya OTP le NSP? (Kgetha ho tse latelang):

○ Thomelo ya molaetsa ka mohala wa thekeng (text, calling and whatsapp) \_\_\_\_\_  
 1 \_\_\_\_\_

○ Hlophiso ya dipalangwang ho tloha \_\_\_\_\_  2

○ Thuto e nepahetseng ka OTP le NSP \_\_\_\_\_  3

○ Tseng tsa ditlhahiso:  4



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*Dipalangwang ke enngwe ya ditsela tse ding tse seng di le teng, ka hoo bakudi ba ka bukelwa sepalangwang ka letsatsi leo sepalangwang se tla sepetlele.*

**RE YA LEBOHA KA NAKO YA HAO!**

**LETSATSI LA PUISANO:** \_\_\_\_\_

**NAKO YA PUISANO:** \_\_\_\_\_

## APPENDIX 12: Permission letter



**UNIVERSITY OF THE WESTERN CAPE**  
Private Bag X 17, Bellville 7535, South Africa  
**Tel: +27 21-9592809 Fax: 27 21-959 2872**  
**E-mail: [3816947@uwc.ac.za](mailto:3816947@uwc.ac.za)**

**Enquiries: L**

**Makhaye**

**Date: 20/03/20**

**Att: Mrs Xaba**  
**Chief Executive Officer**

**Re: Request for Authority to Conduct Research in Edendale Hospital Dietetics department as part of master's in Public Health-Nutrition fulfillment**

Dear Mrs Xaba and Executive management

I hereby request for permission to conduct a research in Edendale Hospital Dietetics department as part of a master's in public health-Nutrition fulfilment. My name is Likhabiso Makhaye and I am currently enrolled by the University of Western Cape, South Africa. I am doing my final year in Public Health Nutrition and I wish to conduct a research title "*Factors affecting the compliance of mothers/caregivers of malnourished children, aged 6-59 months, attending outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.*"

The research participants will be mothers /caregivers of malnourished children aged 6-59 months attending OTP and NSP at the dietetics departments. **The study will look at the following objectives:**

1. To identify socio-demographic affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.
2. To identify psychosocial factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

3. To identify if knowledge regarding the OTP and NSP affect the compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

4. To identify ways in which compliance with the programmes can be improved.

The information that will be obtained from the study could be relevant when planning and implementing tailored programmes and strategies to address problems faced by mothers/caregivers' children ages between 6-59 months old, attending OTP and NSP at the hospital.

Please do not hesitate to request for further information.

Kind regards

L E Makhaye

Registered dietitian (SA)

DT 0035866





## APPENDIX 13: Permission letter to District manager



**UNIVERSITY OF THE WESTERN CAPE**  
Private Bag X 17, Bellville 7535, South Africa  
*Tel: +27 21-9592809 Fax: 27 21-959 2872*  
**E-mail: [3816947@uwc.ac.za](mailto:3816947@uwc.ac.za)**

**Enquiries: L Makhaye**

**Date: 20/03/20**

**Att: District manager**

**Re: Request for Authority to Conduct Research in Edendale Hospital Dietetics department at UMGungundlovu district as part of master's in Public Health-Nutrition fulfillment**

**Dear District manager and Executive management**

I hereby request for permission to conduct a research in Edendale Hospital Dietetics department as part of a master's in public health-Nutrition fulfillment. My name is Likhabiso Makhaye and I am currently enrolled by the University of Western Cape, South Africa. I am doing my final year in Public Health Nutrition and I wish to conduct a research title "*Factors affecting the compliance of mothers/caregivers of malnourished children, aged 6-59 months, attending outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.*"

The research participants will be mothers/caregivers of malnourished children aged 6-59 months attending OTP and NSP at the dietetics departments. **The study will look at the following objectives:**

1. To identify socio-demographic factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.
2. To identify psychosocial factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

3. To identify if knowledge regarding the OTP and NSP affect the compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

4. To identify ways in which compliance with the programmes can be improved.

The information that will be obtained from the study could be relevant when planning and implementing tailored programmes and strategies to address problems faced by mothers/caregivers' children ages between 6-59 months old, attending OTP and NSP at the hospital and similar settings around Umgungundlovu district.

Please do not hesitate to request for further information.

Kind regards

L E Makhaye

Registered dietitian (SA)

DT 003586



## APPENDIX 14: Hospital ethics approval



**KWAZULU-NATAL PROVINCE**  
HEALTH  
REPUBLIC OF SOUTH AFRICA

### DIRECTORATE:

Edendale Hospital  
Lot 89, Selby Msimang Road, Pietermaritzburg, 3216  
Tel: 033 395 4005 Fax: 033 395 4187

MEDICAL SERVICES

Enquires: Miss NF Mbele  
Tel No. 033 3954042  
Date: 18 January 2021

Mrs L Makhaye and Dr N Solomons  
Faculty of Health Science  
Faculty of community and health science

Dear Mrs Makhaye and Dr Solomons

**RE: FACTORS AFFECTING COMPLAINE OF MOTHERS/CAREGIVERS MALNOURISHED CHILDREN AGE 6-59 MONTHS TO AN OUTPATIENT NUTRITION SUPPORT PROGRAMME IN PIETERMARITZBURG KWA-ZULU NATAL**

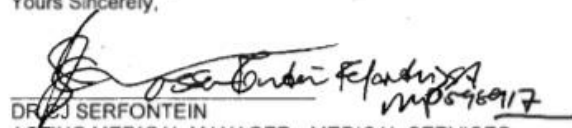
Your request dated 20 October 2020 is acknowledged and refers.

I have pleasure in informing you that permission has been granted by Edendale Hospital to conduct research.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. The Hospital will not provide any resources for this research.
3. You will be expected to provide feedback on your findings to Edendale Hospital.
4. You will also be expected to notify the Medical Manager's office prior start date of the research.

Yours Sincerely,

  
DR J SERFONTEIN  
ACTING MEDICAL MANAGER - MEDICAL SERVICES  
EDENDALE HOSPITAL  
033 395 4005

GROWING KWAZULU-NATAL TOGETHER

## APPENDIX 15: Provincial ethics approval



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

**DIRECTORATE:**

Physical Address: 330 Langalibalele Street, Pietermaritzburg  
Postal Address: Private Bag X9051  
Tel: 033 395 2805/3189/3123 Fax: 033 394 3782  
Email:  
[www.kznhealth.gov.za](http://www.kznhealth.gov.za)

Health Research & Knowledge  
Management

NHRD Ref: KZ\_202101\_005

Dear Mrs L. Makhaye  
(University of the Western Cape)

### Approval of research

1. The research proposal titled '**Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.**' was reviewed by the KwaZulu-Natal Department of Health (KZN-DoH).

The proposal is hereby approved for research to be undertaken at Edendale Hospital.

2. You are requested to take note of the following:
  - a. *All research conducted in KwaZulu-Natal must comply with government regulations relating to Covid-19. These include, but are not limited to: regulations concerning social distancing, the wearing of personal protective equipment, and limitations on meetings and social gatherings.*
  - b. *Kindly liaise with the facility manager BEFORE your research begins in order to ensure that conditions in the facility are conducive to the conduct of your research. These include, but are not limited to, an assurance that the numbers of patients attending the facility are sufficient to support your sample size requirements, and that the space and physical infrastructure of the facility can accommodate the research team and any additional equipment required for the research.*
  - c. *Please ensure that you provide your letter of ethics re-certification to this unit, when the current approval expires.*
  - d. *Provide an interim progress report and final report (electronic and hard copies) when your research is complete to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to [hkrm@kznhealth.gov.za](mailto:hkrm@kznhealth.gov.za)*
  - e. *Please note that the Department of Health shall not be held liable for any injury that occurs as a result of this study.*

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

Yours Sincerely

**Dr E Lutge**

Chairperson, Health Research Committee

Date: 20/01/2021

Fighting Disease, Fighting Poverty, Giving Hope

## APPENDIX 16: University ethics clearance



UNIVERSITY of the  
WESTERN CAPE



02 October 2020

Mrs L Makhaye and Dr N Solomons  
School of Public Health  
Faculty of Community and Health Sciences

**Ethics Reference Number:** BM20/8/8

**Project Title:** Factors affecting compliance of mothers/caregivers of malnourished children aged 6-59 months to an outpatient nutrition support programme in Pietermaritzburg, Kwazulu-Natal.

**Approval Period:** 02 October 2020 – 02 October 2023

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

**Please remember to submit a progress report annually by 30 November for the duration of the project.**

*Permission to conduct the study must be submitted to BMREC for record-keeping.*

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias  
Research Ethics Committee Officer  
University of the Western Cape

Director: Research Development  
University of the Western Cape  
Private Bag X 17  
Bellville 7535  
Republic of South Africa  
Tel: +27 21 959 4111  
Email: [research-ethics@uwc.ac.za](mailto:research-ethics@uwc.ac.za)

NHREC Registration Number: BMREC-130416-050

FROM HOPE TO ACTION THROUGH KNOWLEDGE.



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WESTERN CAPE