

**PREVALENCE AND FACTORS ASSOCIATED WITH CLEFT LIP AND PALATE
INFANTS' FAILURE TO THRIVE AFTER NUTRITIONAL REHABILITATION AT
CORSU REHABILITATION HOSPITAL, ENTEBBE**

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DECLARATION

I, Namugerwa Christine hereby declare that all the work submitted is original except where otherwise acknowledged. This work has not been presented to any other University for any award

Signature

A blue ink handwritten signature, appearing to be 'C. Namugerwa', is displayed within a light blue rectangular box.

Date **28/02/2022**

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APPROVAL

I confirm that I have closely supervised the development of this research report for the research study on “Prevalence and factors associated with cleft lip and palate infants’ failure to thrive after nutritional rehabilitation at CORSU rehabilitation hospital”, and hereby grant my approval for its submission to Clarke International University.

Signature.....Date.....

MRS. AGNES LUKOOSI KIMARA
(SUPERVISOR)

DEDICATION

This work is completely dedicated to my beloved mother, whose constant support, prayers and encouragement have helped me to go through to accomplish this course at Clarke International University. She has always been helping to keep my beloved daughter whenever I would go for the project activities.

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LIST OF ABBREVIATIONS AND ACRONYMS

C.I.U.REC:	Clarke International University Research Committee
CLP:	Cleft lip and palate
CoRSU:	Comprehensive Rehabilitation Service in Uganda
CP+/-L:	Cleft palate with or without Cleft lip
F.T.T:	Failure to Thrive
HIV/AIDS:	Human Immuno-deficiency Virus
KI:	Key Informant
MoH:	Ministry of Health
NRP:	Nutrition Rehabilitation Program
UK:	United Kingdom
UNCST:	Uganda National Council of Science and Technology
V.V.F:	Vesical-Vaginal Fistula
WHO:	World Health Organization

OPERATIONAL DEFINITIONS

In this research study;

Cleft lip and palate; Is a birth defect which occurs when the roof of the mouth and the upper lip are not completely joined.

Caregivers: will refer to informal caregivers who provide all-time care for the CLP infant and are responsible for a multitude of tasks including but not limited to: feeding and personal care of the infant, administration of medicines and other therapies, emotional support, coordination of medical care and transportation.

Failure to thrive; This is the inability to maintain growth in childhood

Infant: is a child of aged 0 to 24 months.

Malnutrition: refers to deficiencies and imbalances in an infant's intake of energy and/or nutrients which results into stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals).

Nutritional Rehabilitation program: This is an intervention approach to reduce the rate of malnutrition among cleft lip and palate infants.

Prevalence: Is the total number of cleft lip and palate who failed to thrive after Nutrition rehabilitation in the year 2019.

ABSTRACT

Background; Cleft palate and/or cleft lip (CP+/-L) are among the most common congenital anomalies, with an incidence of 1/1000 live births globally and 0.73/1000 live births in Uganda.

Study objectives: the main objective was to assess the prevalence and associated factors in CLP infants' failure to thrive after nutritional rehabilitation at CoRSU hospital Wakiso district with the specific objectives being caregiver, infant and health facility factors associated with failure to thrive.

Methods: The researcher used an analytical cross sectional study design employing both qualitative and quantitative data collections approaches. Frequency distribution of the variables was presented using percentage, chi-square test was used to assess the level of association at 95% level of confidence, and the results were triangulated using qualitative findings.

Results: The study found that the prevalence of CLP infants' failure to thrive was very high (95%) among infants after nutrition rehabilitation. However, higher prevalence was observed among infants whose caregivers were housewives (57.1%), low and middle monthly income earners (85.8%), those who were rural residents, (57.1%), children who had had infections ($p=0.023$) and, those able to feed with bottles (97.6%).

Conclusions: A relatively close association was observed between caregiver factors and failure to thrive among CLP infants in varying proportions whereby caregivers' knowledge on feeding, poor attitudes towards feeding CLP infants, had higher proportions; while being a housewife and having low level of income; and residence in rural areas were other barriers. Infant factors associated with CLP infant's failure to thrive were absence of suckling and bottle-feeding ability, having oropharyngeal dysphagia and having recurring infections.

Recommendations: CoRSU management to include family counselling, income generating activities and home visits or free telephone contacts for caregivers into their interventions; should avail recordings of the health information in the local languages. Min of Health should establish nutrition rehabilitation units in all the regional referral hospitals. Early assessment and prompt treatment of infection should continue to be priority.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background to the study, the problem statement, general objective and specific objectives of the study on “Prevalence and factors associated with cleft lip and palate infants’ failure to thrive after nutritional rehabilitation at CoRSU rehabilitation Hospital. The significance of the study and conceptual framework are also included.

1.1 Background of the study

Infants born with deformities of cleft palate and/or lip are among the most vulnerable children in the world, as they suffer from varieties of complications since the day one of their life. The most important is the difficulty in feeding, which leads to insufficient nutrients intake and thereby causing deleterious effects on their overall development, leading to severe forms of malnutrition and death in some cases. Cleft palate and/or cleft lip (CP+/-L) are among the most common congenital anomalies, with an incidence of 1/1000 live births globally(Tungotyo et al., 2017a) and 0.73/1000 live births in Uganda(Cubitt et al., 2012). Children with CP+/-L are more prone to malnutrition compared to those with only Cleft Lip (CL)(Tungotyo et al., 2017a).

The prevalence of malnutrition among infants with CP+/-L in the literature varies between 30% and 50%(Tungotyo et al., 2017a). Malnutrition in these children with CP+/-L is majorly associated with feeding difficulties including the failure to generate sufficient suction pressure during feeding hence affecting the attachment to the breast/artificial nipple, milk extraction, bolus organization and retention of the bolus before swallow initiation (Pandya and Boorman, 2001). Malnutrition and infection are interlinked as malnutrition is the primary cause of immunodeficiency worldwide and is therefore responsible for the high mortality of children less than five years old who die as a result of infectious diseases(Katona and Katona-Apte, 2008). Numerous feeding interventions have been described in the literature for infants born with a cleft palate. A study done in the UK showed a reduction in failure to thrive among infants with CP+/-L after implementation of an early feeding program that involved domiciliary visits, breast feeding support, feeding education and monitoring of growth(Tungotyo et al., 2017a).

Despite the availability of surgical corrective interventions, few CP+/-L children are returned for their cleft palate surgical operation (usually after six months of age) in our setting a phenomenon hypothesized to be due to a likelihood of death before scheduled date of operation potentially due to consequences of malnutrition (Lien, 2020). Good nutrition is also key in infants with CP+/-L given its role in quickening wound healing post-operatively (Tungotyo et al., 2017a). However, adequate information on the prevalence and factors associated with malnutrition in CP+/-L infants is still lacking in our setting. In this study, we aimed at establishing the prevalence and associated factors of malnutrition among infants with CP+/-L at CoRSU hospital.

Failure to thrive (FTT) is a term used to describe inadequate growth or the inability to maintain growth in childhood(Tungotyo et al., 2017a). Lee, Nunn and Wright, (1997) identifies some of the clinical manifestation of a child with CLP who is failing to thrive, which include; compromised growth, where the height, weight and head circumference do not match the standard growth charts(Gallego et al., 2021).If left unattended to failure to thrive is a recurring problem for many infants with CLP, which in turn negatively affects the children's physical, motor, cognitive developments plus the future well-being and the schedule for the surgery.

Previous studies that documented prevalence of malnutrition in this population were done in other geographical regions like the UK, Brazil and India (Leite et al., 2013)(Giridhar, 2016; Miranda *et al.*, 2016). These studies established the frequency of failure to thrive(FTT) in children undergoing primary cleft procedures by using growth charts and standard-deviation scores. The studies observed that there was a high incidence of FTT in palatal clefts, especially if these were associated with a syndrome or anomaly ($P=0.001$)(O'Sullivan, 2013). In view of the high rates of FTT, two changes were instructed a feeding support nurse was appointed to supervise and monitor patients at risk and all patients with the Pierre Robin sequence had supervised airway management(Steward, 2007).

The outcome of failure to thrive in infants with CLP, do not only negatively affect the child's development but also the child's future growth and the psychological part of the parents. In a study which was carried out, the growth pattern of the majority of patients with CL/P appears to be markedly abnormal, while some patients still follow a relatively normal pattern of weight and

length acquisition(Wu et al., 2020). Numerous feeding interventions have been described in the literature for infants born with a cleft palate. A study done in UK showed a reduction in failure to thrive among infants with CP+/-L after implementation of early feeding program that involved domiciliary visits, breast-feeding support, feeding education and monitoring of growth(Tungotyo et al., 2017a).

In East Africa, in the study “Cleft and Nutrition: The double burden to Kenyan mothers,” Sara Jerving states that, Nutrition-related factors contribute to almost half of all deaths of children under 5 years(Weatherley- White et al., 2011). The problem is heightened for children with clefts.These babies with cleft need heightened nutrition support in order to ensure they are healthy and able to safely undergo the surgery to fix their clefts (Delage et al., 2021a).

In Uganda, a study by (Tungotyo et al., 2017a) states that CP+/-L are among the common congenital anomalies with an incidence of 0.73/1000 live births. CP+/-L infants born in Uganda suffers a high burden of malnutrition. However, preventive strategies are needed with focus on proper feeding information.In the case of CoRSU Rehabilitation hospital infants in Uganda who are failing to thrive after enrollment on NRP, determining the percentage and identifying the factors that caused them to fail to thrive are the very first steps in addressing the problem.

1.2 Statement of the problem

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of all children to their full potential(Richter et al., 2017). Breast-feeding is the foundation of good nutrition and provides the basis for health throughout the life span (Qiu et al., 2010). For infants with cleft lip and/or palate (CP+/-L) it is particularly very crucial, given its role in enhancing theirquality of life and quickening wound healing post-operatively(Tungotyo et al., 2017a). At Comprehensive Rehabilitation services in Uganda (CoRSU) infants with CLP in addition to receiving corrective surgical interventions, are offered intensive nutritional rehabilitation that is much needed in the long-term care and management of their condition.

The goals for feeding infants with CLP are to provide optimal nutrition for growth, choose a safe and supportive feeding method and supplies and establish andmaintain a nurturing caregiver-infant bond.In addition, there is the availability of new outpatient space, breast feeding/expressing room and kitchen, which have improved the privacy offered to patients

during outpatient assessments and expanded on the nutrition rehabilitation. Other strategies are establishing a partnership with Mwanamugimu Nutrition Unit, Mulago Hospital that enables CoRSU to receive therapeutic feeds that improve the management of severely malnourished infants.

In spite of the above-mentioned interventions, aimed at improving the infants' nutrition status, malnutrition in infants with CP+/-L has continued to occur. A considerable number of CP+/-L infants are returned to the hospital for cleft repair (usually after six months of age) with evidence of failure to thrive. As a result, the infants suffer from many health difficulties including severe malnutrition that leads to failure to thrive, increased morbidity and mortality of the infants. They are also at a high risk for laryngeal penetration and aspiration that can lead to pneumonia and death. Currently at CoRSU Rehabilitation hospital the number of severely malnourished CLP infants stands at 95% (Tungotyo et al., 2017a).

From the researcher's view, the phenomenon is hypothesized to be due to feeding difficulties such as, the failure to generate sufficient suction pressure during feeding, hence affecting the attachment to the breast, artificial nipple, milk extraction, bolus organization and retention of the bolus before swallow initiation. In addition, age, income level and knowledge and attitudes, of caregivers as well as availability of nutritional information and training post-delivery. However, so far, adequate information on the prevalence of failure to thrive in CP+/-L infants in this setting is lacking and the factors associated with the observed continuing poor nutritional status are not clear. This study therefore intends to determine the percentage and the associated factors of CLP infants' failure to thrive after nutrition rehabilitation at CoRSU Rehabilitation Hospital also as to address the problem.

1.3 General Objective of the study

To determine the prevalence and factors associated with Cleft Lip and Palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2021.

1.4 Specific objectives

1. To determine the prevalence of CLP infants who fail to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2021.
2. To assess caregiver factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2021.
3. To assess infants' factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2021.
4. To assess the health facility factors associated with cleft lip and palate infants' failure to thrive at CoRSU rehabilitation hospital by December 2021.

1.5 Research Questions

1. What is the prevalence of cleft lip and palate infants who fail to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital?
2. What are the caregiver factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital?
3. What are the infant factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital?
4. What are the health facility factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital?

1.6 Significance of the study

- **To the Ministry of Health**- the study findings will be used to improve on the existing policies and programs of how to improve on the interventions for better health outcomes.
- **To the health facility**-the findings of this study will be used to improve the common feeding problems established. In addition, the knowledge of factors will improve secondary prevention measures especially the information given to parents and guardians of CLP infants in relation to feeding. The researchers- this study will be beneficial and will work as a baseline for other research areas in future.

- **To the community**-the results of this study will be used to conduct specific health education and encouraging messages for addressing stigma, nutrition and associated issues among caregivers with children of CLP.
- **To the researcher** - this research study is a requirement for the researcher's attainment of the Bachelor's degree in Nursing Sciences of Clarke International University.

1.7 Conceptual framework

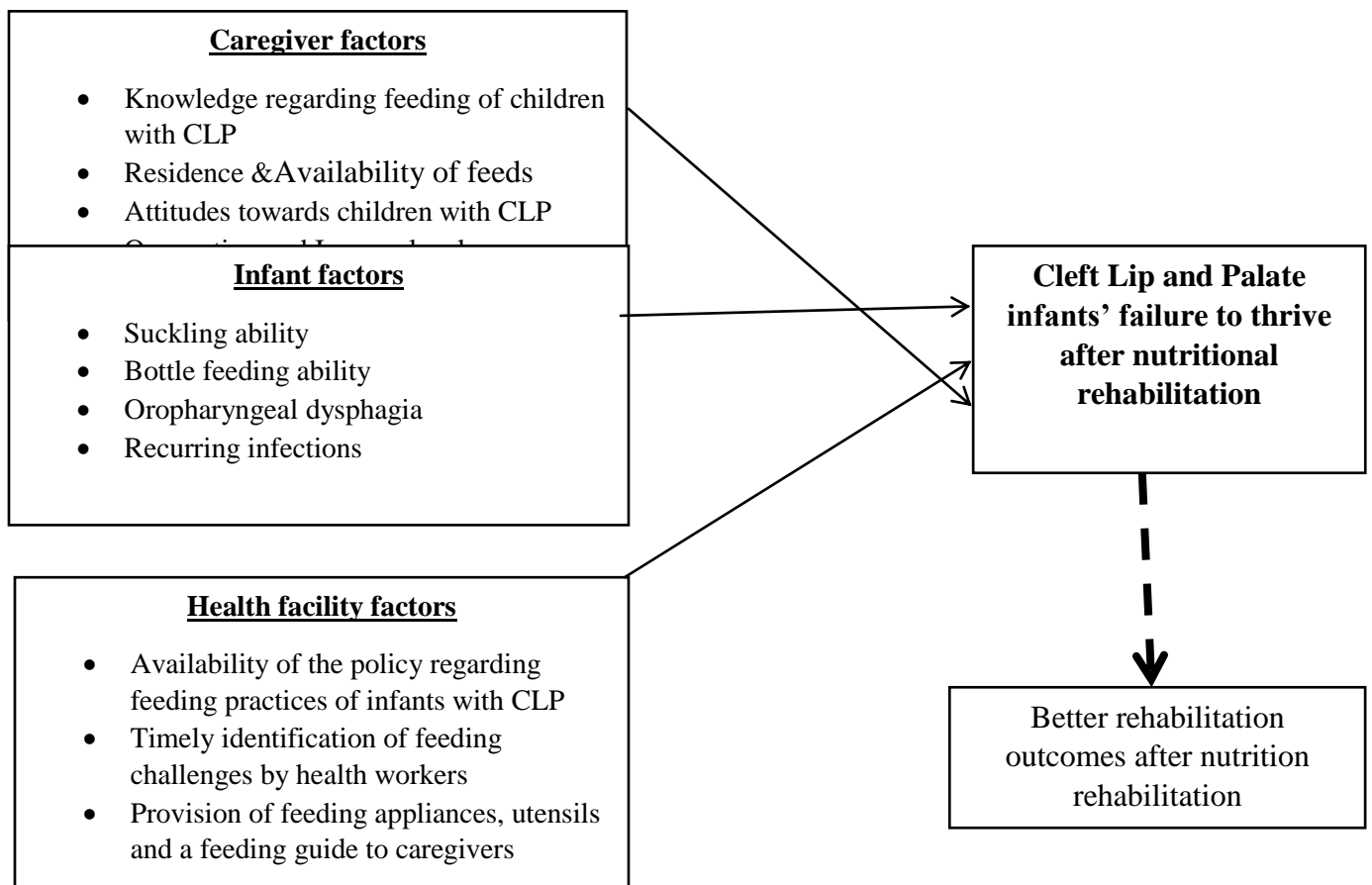


Figure 1: A conceptual framework showing the relationship between independent variables and the dependent variables.

Description of the Conceptual Framework

The conceptual framework above represents a depicted relationship between factors hypothesized to be associated with nutritional status among children with CLP. The arrows show the direction of influence and once the independent variables are addressed, the researcher expects an improvement in thriving among the infants following nutritional rehabilitation.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the definition, causes effects and the prevalence of failure to Thrive in cleft lip and palate infants as well as the caregiver factors, infant factors and health facility factors, associated with failure to thrive in infants with CLP. The literature review is presented according to objectives and each of the indicators under study.

2.1 Failure to thrive in Infants

Failure to thrive (FTT) is the inadequate physical growth of an infant. It is potentially a life-threatening disorder of infants, who fail to gain or may even lose weight. An infant is considered failing to thrive when:

- I. His or her physical growth is less than that of his or her peers.
- II. He or she fails to attain the potentials expected for a child of that specific age.
- III. He or she has a sign of unexplained loss of weight or poor weight gain.

(Krugman and Dubowitz, 2003) define FTT as the inadequate physical growth diagnosed by observation of growth over time using a standard growth chart. In addition, (Cole and Lanham, 2011) defines FTT as a state of under nutrition due to inadequate caloric intake, inadequate caloric absorption, or excessive caloric expenditure.

Causes of Failure to thrive in Infants

FTT in infants is related to inadequate intake of food calories needed by the body for an infant to grow. This may be due to a variety of risk factors which include: congenital defects of the digestive system for example CLP, which leads to early feeding difficulties, maternal depression leading to reduction in breast milk production, thus inadequate calorie intake for the infant, child neglect, poor feeding habits and poverty. In fact (Cole and Lanham, 2011) mentioned that, the causes if FTT were subdivided into organic (medical) and nonorganic (social or environmental). He added that in many children the cause is multi-factorial and includes biological, psychosocial and environmental contributors. (Cole and Lanham, 2011) mentioned the potential causes of FTT as; inadequate calorie intake, inadequate nutrient absorption and increased metabolism. In addition, mentioned the risk factors as; medical conditions and psychosocial issues. (Jeong, 2011)

mentioned that FTT may result from a variety of organic and nonorganic causes or a combination of both. In addition, clarified that there is increasing recognition that in many children the cause is multi-factorial and includes biological, psychosocial and environmental contributors.

In infants with CLP in particular, due to the unfused lip and palate, the gap is created in the upper mouth (soft and hard palate). Because of this gap, the child fails to latch the nipple of the breast, thus facing feeding difficulties leading to inadequate intake of calories. In fact (Jeong, 2011), stated that it cannot be ignored that the parents of those infants may face psychological stress due to the cleft defect in the baby. This brings a reduction in the production of breast milk hence, failure of the infant to get enough calories for the body to grow. As stated before, CLP infants also tend to have other underlying medical conditions, Pierre-Robin Sequence (undeveloped jaw) and heart defects being the commonest.

In a study by (Cole and Lanham, 2011), it was highlighted that FTT in infants with CLP is categorized according to the cleft type, where there is a high incidence in palatal clefts especially if an infant has an isolated syndrome.

Signs and symptoms of Failure to thrive in Infants

An infant with FTT presents with: lack of weight gain, delays in reaching the developmental milestones for example, crawling, standing, walking and talking, lack of emotions like laughing, smiling and making eye contact, irritability. A study by Cole and Lanham, (2011), stated that an infant may fail to gain weight, may present with organomegaly, failure to gain weight despite adequate caloric intake. Specifically, CLP infants present with muscle wastage and weakness, old man face appearance, recurrent vomiting, dysphagia, recurring cough, dehydration if take a chest x-ray it reveals an enlarged heart. Generally, an infant with FTT presents with developmental delays, which may be revealed on the standard growth chart.

2.1.2 Prevalence of Cleft Lip and Palate infants' Failure to thrive

Globally, there is a significant evidence of severe malnutrition in infants with CLP (Delage et al., 2021a). Smile train states that, globally malnutrition is related to almost half of all deaths of children under 5 years of age (Kosec et al., 2015). This is because children with clefts are

particularly vulnerable to malnutrition, as clefts can make it more challenging for infants to breast feed. Infants with CLP are at a high risk of failure to thrive due to feeding challenges (Sommer et al., 2021). In China, (Tomás et al., 2017) states that, the majority of infants with CLP appear to be markedly abnormal, where malnutrition and developmental delay has been acquired over the past 10 years. Unfortunately, the study indicated that there is inadequate data regarding the true development status of infant with CLP.

In the United States of America a study by (Baylis et al., 2018), to improve feeding and growth outcomes in infants with CLP, showed that the percentage of FTT in infants with CLP was 17%, which reduced to 7% after interventions that aimed at improving feeding efficiency and effectiveness. This indicates that it is always good to assess feeding practices of CLP infants, to ensure proper growth and development of a child. Further still in India, (Baylis et al., 2018) states that, the prevalence of malnutrition among infants with CLP in literature varies between 30-50%. A study by Chattopadhyay *et al.*, (2021) to identify the proportion of malnutrition, including the deficiency of major micronutrients namely, iron, folate and vitamin B₁₂ in children with CLP revealed that 53% of the children suffered from moderate to severe malnutrition, according to World Health Organization (WHO, 2010).

In Africa, there is significant evidence that many CLP infants suffer from malnutrition due to feeding challenges, low economic status of the families, and poverty where the patients cannot afford feeding supplements (Baylis et al., 2018). Some children die before surgery. The prevalence of malnutrition among CLP infants in Africa has been reported to be high though the data regarding the prevalence is rare. In Nigeria, (Senbanjo et al., 2013) found a prevalence of 23.1% and WHO quoted 27.2% (Katusabe *et al.*, 2018).

In East Africa, Uganda, a study (Kambale Vitswamba Obady, (2019) July Dissertation), was done to determine malnutrition in CLP children at CoRSU hospital. The study found that, the CLP children's average weights were significantly lower both at outpatient visit and before operation. Uganda has a prevalence of 68% (Tungotyo, Atwine, *et al.*, (2017)). For the rest of the countries the data regarding malnutrition in infants with CLP is not clear, but there is a substantial evidence of malnutrition among infants with CLP. Sources from various sources revealed factors that are associated with CLP infants' failure to thrive after nutritional rehabilitation.

For purposes of this study, they have been classified and discussed by the researcher as: caregiver factors, infant factors and health system factors.

2.2 Caregiver factors associated with CLP infants' failure to thrive after nutritional rehabilitation

- **Knowledge of caregivers regarding feeding of infants with CLP**

After delivery, feeding of the baby is the top most prioritized activity to all mothers. Children need food nutrients to grow and develop, especially infants between 0-24 months of age. Proper feeding of infants helps to prevent childhood diseases, infection and promotes healing from any other sickness. In a child with CLP, nutrition is the first priority as for any other child in order to grow and improve the health (Elramady, 2021). CLP infants are vulnerable due to the congenital defect, which does not allow them to feed normally. Due to the feeding difficulties, mothers face challenges while feeding them, for example, choking and nasal regurgitation. Therefore, it is very important to assess the caregiver factors influencing feeding in CLP infants.

In India a study by Murthy et al., (2020) to compare the effectiveness of specially designed audio-visual module over traditional instructional module in improving assisted breast feeding habits, showed that there was a significant improvement in knowledge of the mothers from the baseline to six months. All mothers of the infants affected with CLP, were provided with the same knowledge and care. The custom-made audio-visual module helped the mothers adopt better to the stressful situation following the birth of the infant affected with CLP. It is therefore very important to provide breast feeding knowledge to the mothers of infants with CLP for the child to thrive.

Furthermore, a study carried out at CoRSU hospital, Ugandato determine the prevalence and factors associated with malnutrition among infants with CLP, showed that among them was having care takers who were lacking nutritional information post-delivery (Tungotyo et al., 2017a). This aggravates the situation whereby the infant will not be able to receive the ideal nutrients needed to thrive. Another study by (Nabatanzi et al., 2019), to determine the feeding practices, techniques and maternal feeding knowledge among children with oral clefts revealed

that most mothers had inadequate knowledge on feeding their infants. Therefore, providing nutritional information is very important to the caregivers / mothers to the CLP infants.

- **Residence and availability of feeds**

This is a factor which is likely to cause Failure to thrive in infants with cleft lip and palate in a view of comparing the rural and urban residence, in relation to the availability of information and feeds, for example from the garden or market. In America, a study by (Snyder and Ruscello, 2019) to study the initial feeding experiences of parents who reside in the rural areas showed that the majority of parents reported initial difficulties with feeding their infants. The study indicated the need to seek information and assistance from various sources. Because of the findings, an informational resource was developed to inform rural health-care professionals of the early feeding issues of children born with CLP. It is particularly, very important to assess the initial feeding experience of mothers towards feeding their newly CLP born babies, as early as in the first hour of the child's life, to assist the mother accordingly.

In the United Arab Emirates and Indonesia, a study by Wijekoon, Herath and Mahendran, (2019), to assess the mothers awareness on breast feeding and formula milk feeding, weaning, growth and development of infants with CLP, showed that a large number of mothers were illiterate as it may be because they belonged to rural areas. Over half of the mothers demonstrated a fairly higher knowledge of factors related to breast-feeding, formula milk feeding, weaning and growth and development of infants with a cleft. They recommended working towards feeding guidelines for infants.

- **Attitude of caregivers towards feeding infants with CLP**

In Europe a study (Srivastav et al., 2021), to assess and analyze the global status of parental responses to feeding problems in parents with CLP infants and to provide recommendations for future research revealed parental dissatisfaction with the knowledge provided. In addition, the presence of anxiety and low self-esteem among parents was also highlighted. Despite of receiving early team care and feeding interventions, mothers of infants with CLP reported higher stress and more challenges with feeding and growth. If the mother is stressed, it is automatic that she can fail to produce breast milk, and this will lead to a child's failure to get enough calories, which leads to failure to thrive. The study recommended future studies to examine targeted psychosocial interventions to improve feeding and growth outcomes in infants with CLP. It is very important therefore for a medical or nursing practitioner to intervene as soon as possible

after child delivery to assess the infant's suckling ability, allay anxiety and stress to prevent breast milk reduction, thus helping the child to thrive.

According to (Kalland, 1995) in Finland, a study to find out how the CLP problem affects the maternal-infant bonding process and to find implications for parental education at the outset. The study indicated that, problems with feeding deserve attention in order to facilitate the bonding process between the mother and her infant. This indicates that, the knowledge and attitude of mothers towards feeding CLP infants in Finland was very poor, and this could affect the mother-infant bonding. Bonding in particular is facilitated by the feeding process, which in this case has difficulties. Therefore, it is very important for the cleft specialist to put in efforts and help the mothers to attain feeding knowledge, which will improve their attitude towards feeding their CLP infants and thus improving the maternal-infant bonding.

In India, a study by (Smith, 2020) to find out the knowledge, attitude, beliefs and feeding methods practiced by the parents of babies with CLP states that, there are multiple barriers, as well as numerous medical and psychosocial supports that facilitated breast milk feeding success. Meaning that, mothers lacked knowledge of feeding cleft lip and palate infants, and without all these supports, they faced many challenges that may have interfered with their attitude towards feeding their babies. It showed that 38% of infants born with CLP, did not receive colostrum due to several reasons like myths, lack of suckling reflex and 98% of mothers did not have knowledge regarding the importance of the colostrum. Spoon-feeding was found to be the commonest feeding method.

Poor weight gain is also associated with a mother's low perception of herself and her child and her tendency towards depression which resulted in mothers having poor attitude towards feeding their babies. In Africa, a study by Babalola et al., (2016), to assess the influence of non-syndromes CLP on nutritional status of children in Nigeria showed that children born with CLP are subject of discrimination by the society brought about by the children's appearance, which puts them at a great disadvantage. They therefore tend to suffer malnutrition due to lack of quality care especially from their parents' The low self-esteem coupled with lack of knowledge leads to neglect or poor feeding of the baby.

- **Occupation and Income Level**

Low-income earning may affect the well-being of a family with an infant of CLP, because of the expenses that may come in to ensure that the baby gets the essential care and treatment so as to thrive. Due to low income, feeds may be less in addition to feeding difficulties, because it is a continuous situation in the family, that infant may fail to thrive. In addition, the type of occupation of the caregiver may affect the child's growth, either positively or negatively depending on the time given to care for an infant with CLP. If the caregiver is also the breadwinner you may find that she or he does not have time to care for the infant, and this may lead to malnutrition and thus FTT.

In Turkey a study by (Göymen et al., 2016), to reveal the characteristics of CLP patients with demographic values, it was revealed that a big percentage of CLP infants come from low income family levels. Another study in Brazil by (Beluci et al., 2019), to evaluate the correlation between measures of quality of life and burden in family caregivers of infants with CLP, showed that the greater the burden on the caregiver, the lower was their perception of quality of life.

In Uganda a study by Lundgren and Uhrenfeldt, (2014), to illuminate the health care of malnourished children in Uganda, did not only reveal the importance of parents as caregivers but also showed that lack of financial resources was among the major risk factors that affected children's health. Many caregivers could not afford to buy medication for their children and sought medical care too late. The importance of information and its contribution to improve living condition was obvious. By reaching out to people with poor access to health care facilities, important actions were performed in the struggle of preventing malnutrition.

2.3 Infant factors associated with CLP infants' failure to thrive after nutritional rehabilitation

- **Suckling ability**

Due to the cleft, which goes from the lip to the soft palate in the mouth, the infant most often is not be able to hold the breast nipple to create pressure for suckling. This puts an infant at a very high risk of suffering from malnutrition and may lead to FTT.

In Europe, a study byBurca et al., (2016), to present scientific evidence that supports clinical feeding practices for the CLP infants, revealed that the altered physiological anatomy of the

infants lip and palate, affects their feeding ability and that dysfunction in the ability to coordinate muscle movement to generate negative pressure leads to feeding issues that may grossly compromise the infant's growth.

- **Bottle feeding ability**

After failing to breastfeed due to the cleft defect that is in the lip, hard and soft palate in the mouth of an infant, the child may also be unable to feed using the bottle and teat. This may result into fewer intakes of food nutrients and more air intake. Being less knowledgeable, the caregiver may continue using the same utensils to feed the infant. This will cause malnutrition that may end up causing FTT.

In United Kingdom a study by Martin and Greatrex-White, (2014), to determine the impact of different bottles and teats for feeding babies with CLP on weight velocity feeding behavior and maternal self-esteem indicated that babies with isolated clefts of the hard and soft palate experienced greater feeding problems and suffered the biggest weight losses. The study also highlighted the importance of the early assessment of babies feeding skills, regular follow up, and support from trained and experienced nurse specialists.

In another related study in New York, in which Miller, (2011) set out to review expert opinion and available evidence regarding factors that influence feeding success and efficiency in infants with non-syndromes and syndromes CLP, it was revealed that timely identification of feeding problems by medical personnel including the speech pathologist with subsequent intervention and modification in the feeding method is essential along with provision of early feeding instructions to families. If the medical personnel fail to take a step of assessing infant factors influencing feeding, severe malnutrition or even death may happen.

- **Oropharyngeal dysphagia**

This swallowing problem occurs in the mouth and or throat. It results from impaired muscle function, sensory changes and obstructions in the mouth or throat that may be due to the cleft malformation. This may result into FTT, where an infant may not be able to take in enough nutrients at a time. In Africa, a study by Visser et al., (2018) compared the feeding characteristics of infants with unrepaired CLP and HIV exposure to infants with unrepaired CLP only. Through

Neonatal Feeding Assessment Scale, it was revealed that infants presented with distinctive symptoms of oropharyngeal dysphagia, as swallowing problem that occurred in the mouth resulting from impaired muscle function, sensory changes or growth and obstruction due to the defect of clefting, completely influenced failure to thrive in infants with CLP.

- **Recurring infections**

Depending on the CLP defect, and its location on the body, an infant is prone to infection specifically respiratory tract infections, due to the wide opening and may be the difficulty in swallowing where aspiration is very possible. Even if an infant is able to take in feeds, with recurrent infections, malnutrition may happen and if it's continuous, an infant may suffer FTT. In Tokyo a retrospective study by (Takemura et al., 2002), to correlate the cleft type with incidence of perioperative respiratory complications in infants with cleft lip and palate. The results of the study showed a greater incidence in infants with severe cleft who had bilateral cleft lip and palate with 8.9%.

2.4 Health system factors associated with CLP infants' failure to thrive

- **Availability of a policy regarding to feeding practices of CLP infants.**

This may involve: regular giving of health talk and counseling to caregivers, in relation to feeding infants with CLP, feeding instructions for health workers to give to caregivers for proper feeding of infants with CLP, feeding guidance for the caregivers, to go with at home to ensure proper following of instructions for feeding an infant with cleft lip and palate, and other feeding interventions to fulfill feeding requirements for an infant with CLP.

Korolenkova et al., (2019) mentioned that, a single intervention might not fulfill all feeding requirements of infants with CLP but rather the combined use of different feeding interventions may successfully meet the feeding needs of both mother and child. In Egypt for instance, a study by Nasar et al., (2018) to assess the knowledge and practice of mothers regarding feeding of their infants with CLP showed that, mothers who were given a feeding protocol, which was later, evaluated for its effectiveness, showed an improvement on the knowledge of mothers regarding feeding of their children. This shows that it is very important to keep the mothers knowledgeable about feeding their children in a formalized way such as in form of printed policies and guidelines. This will also ensure that standard and uniform messages are given to the caregivers

by the different staff on duty at the health facility. Keeping them up to date with new methods of feeding their infants is another ideal way to ensure that the infants thrive.

- **Provision of feeding appliances and utensils and feeding guide**

If the health facility is not in position to provide appliances, utensils and the feeding guide, which are the things needed in feeding of a CLP infant, this may lead to the infants' failure to thrive. Because, even the health workers will not be able to provide knowledge to the caregivers on how, to use those special appliances and utensils for feeding the cleft lip and palate infant. This may lead to FTT because of less or no knowledge for using them. It is always important for the hospital that treats CLP infants to look for the ways of providing special needs for them.

In Germany, a study by Abu-Hussein et al., (2017), to present prosthodontics management of an infant with cleft palate (CP), through fabricating a feeding plate, the researcher observed that, the infant had a suckling reflex but could only swallow 10-15ml, during one feeding. The remaining feeding formula was fed via a nasogastric tube. This study revealed that one of the early treatment options in case of delayed surgery is a feeding appliance to cover the defect and bridge the obstacle to aid proper feeding. However, such appliances are at a risk of being swallowed by the infant regardless of the material from which they are made.

- **Timely identification of feeding challenges by health workers**

If the health worker is not knowledgeable about identification of the feeding difficulty, as well as the caregiver, the child with CLP will definitely suffer FTT. Relatedly, the training of professionals is very important to help in early identification of the problem.

In Brazil, a study by de Araujo et al., (2016), to verify feeding resources used prior to corrective and to discuss suggestions to improve common feeding problems around the world, indicated the need to increase professional training and public policies addressing neonatal timely identification of feeding challenges by health workers wherever possible. From another study in India Mossey and Little, (2009), stated that inequalities exist, both in access to and quality of cleft care with distinct differences in urban versus rural access. Although, the situation has been significantly improved through, the intervention of non-governmental organizations such as

Smile Train and Transforming Faces, worldwide participating in primary surgical repair programs, these interventions must include timely identification of feeding challenges and early start of the feeding process for CLP infants.

Similarly, a study in Africa by Lee et al., (2020), conducted to determine the evidence based practice for feeding interventions in the CLP population revealed that the main feeding intervention themes included; care giver training 43%, use of feeding utensils 40%, use of prostheses 14% and alternative feeding 3%. In Uganda's case, a study by Nabatanzi et al., (2019) to determine the feeding practices, techniques and maternal feeding knowledge among children with oral clefts attending CoRSU Hospital, the researcher showed that there is need to improve the feeding guidance given to mothers of children with oral cleft. This reveals that there were inefficient strategies in the hospital relating to feeding CLP infants.

A study by Tungotyo et al., (2017a) to determine the prevalence and factors associated with malnutrition among infants with CLP attending CoRSU hospital Uganda, showed that in the factors associated with malnutrition included, having care takers who were lacking nutritional information post-delivery. If the caretaker lacks timely knowledge and understanding of the infant's feeding challenges from the health workers, they will also lack nutritional information. This aggravates the situation where the infant will not be able to receive the ideal nutrients needed to thrive thus FTT. Therefore, providing nutritional information is as very important as timely detection and educating of the caregivers about the feeding challenges which their CLP infants have.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter describes the study design, sources of data, study population, sample size calculation, sampling procedures, study variables, data collection techniques, data collection tools, plan for data analysis, quality control issues, ethical issues, study limitations and plan for dissemination of study findings.

3.1 Study design

The study used an analytical cross-sectional design that employed both quantitative and qualitative data collection methods. It involved retrospective review of medical records of all CLP infants who reported to the hospital with less or no weight gain. The rationale for this design is that the data was collected at one point in time and this was used to generalize to the study population receiving care at CoRSU hospital. Qualitative data was collected from face-to-face in-depth interviews with four key informants.

3.2 Sources of data

In this study, both primary and secondary sources of data were collected and used. Primary data was collected from the caregivers while secondary data was collected from the medical records in the nutrition unit and available literature from textbooks, journals and online sources regarding the subject of study. The rationale for this was that during data analysis there was data triangulation in order to establish the associated factors.

3.3 Study area

The study was carried out at Comprehensive Rehabilitation services in Uganda (CoRSU) hospital, located in Kisubi, Katabi Sub-County, Wakiso district in Uganda's Central Region (Buganda). The hospital lies about 18 kilometers (11 mi), by road, northeast of Entebbe International Airport, along the Kampala–Entebbe Road and approximately 33 kilometers (21 mi), by road, south of Mulago National Referral Hospital, in Kampala, Uganda's capital city. The coordinates of CoRSU Rehabilitation hospital are 0°07'58.0"N, 32°32'08.0"E (Latitude: 0.132778; Longitude: 32.535556).

CoRSU was established in 2009 as a private, non-profit, non-governmental organization in Uganda. CoRSU's core mandate is to mitigate the debilitating effects of disabling physical conditions, by ensuring accessibility and availability of quality, preventative, curative, rehabilitative services for people with disability in Uganda and neighboring countries. As a specialty, the hospital provides subsidized treatments (surgery and rehabilitation) for vulnerable patients and this is carried out through social assessment tools. The hospital has performed CLP surgeries since 2009. As of December 2017, CoRSU hospital has maintained the following departments: Orthopedic Surgery, Plastic Surgery, Rehabilitative Services, Nursing Services, Nutrition, Services, Dental Services, VVF Department, Private Patient Services, Department of Community Outreach, Human Resources Department, Department of Strategic Information.

The researcher conducted the research specifically at the hospital nutrition unit. The area was purposefully selected because it is where the CLP children are admitted, nutritionally rehabilitated and reviewed/assessed for weight gain and fitness before going for rehabilitative surgery.

3.4 Study population

The study focused on caregivers of CLP infants aged 0-2 years who reported to the hospital for surgery, and in particular, those who reported for the second time with less or no weight gain after having received nutrition support. This population specifically comprised adult persons who provide direct all-time care for the CLP infant and are responsible for a multitude of tasks including feeding and personal care, administration of medicines and other therapies, emotional support, coordination of medical care and transportation to hospital. They are also often the main source of valuable and accurate information about the child.

The study also included four key informants namely: the Nutritionist (KI,1), Nurse in charge (KI,2) and two nurses who have worked on the unit for at least 5 years (KI,3 and KI,4).

3.5 Sample size calculation

The Yamane formula was used for sample size calculation

That is $n = \frac{N}{1 + N(e)^2}$

$$1 + N(e)^2$$

n is sample size

N is population size

e is margin of error (0.05)²

if N = 237

$$e = 0.05$$

$$n = \frac{237}{1 + 237(0.0025)}$$

$$1 + 237(0.0025)$$

$$1 + 0.5925$$

$$= \frac{237}{1.5925} = 148.822$$

$$1.5925$$

$$\mathbf{n = 149}$$

3.6 Sampling procedures

Convenience sampling method was used to select records of CLP infants, who came back to the hospital for nutrition review of weight for surgery. Each caregiver of an infant with less or no weight gain had a chance of being selected to participate in the study.

3.7 Inclusion and Exclusion Criteria

3.7.1 Inclusion Criteria

This comprised all adult CLP caregivers of infants aged 0-2 years who had ever been in admission at the CoRSU nutritional rehabilitation ward and had ever returned for review and who consented to participate for the study.

3.7.2 Exclusion Criteria

This comprised all adult CLP caregivers of infants aged 0-2 years who had ever been in admission at the CoRSU nutritional rehabilitation ward and had ever returned for review but who declined to take part in the study and those who were not in position to participate due to severe ill health of the infants.

3.8 Study variables

- **The dependent variable** was failure to thrive (FTT). This was measured by the number of infants with CLP who received nutritional rehabilitation and failed to thrive after a threshold given time for recovery. All infants who recovered within the given time were given a '1' as a success and all those who did not recover within a given time were given a '0' as a failure.
- **The independent variables** were:
 - **Caregiver factors** namely: Age, Sex, Education level, Income levels, Availability of feeds, Knowledge regarding feeding of children with CLP, Attitudes towards infants with CLP disability;
 - **Infant factors** namely: Age, Sex, Suckling ability, Bottle feeding ability and;
 - **Health system factors** namely: Feeding instructions from health workers, Timely identification of feeding, challenges by health workers, and Attitude of health workers.

3.9 Data collection techniques

Data was collected by retrieving files of infants aged 0-2 years who came back to the hospital with less or no weight gain in the year 2019. If the file met the inclusion criteria, they were selected and the caregiver of the infant were contacted to give informed consent and make the appointment for the interview, one caregiver at a time. As a result of the prevailing situation of the COVID 19 complete lockdown, information about the intended study, informed consent and data collection from each of the participants were carried out through phone contacts available in the patient's medical records. Data comprising of age, weight on the first visit and weight on the first review was likewise, collected from the patient's file.

Face to face interviews were used to collect in-depth qualitative data from the four key informants while strictly observing the Covid19 standard operating procedures (SOPs) that were already in place at the study site.

3.10 Data collection tools

The researcher used a semi-structured questionnaire in both English and Luganda which was administered through phone calls to the caregivers who responded to verbally to a call; while a Key Informant Interview guide was used among the key informants. A data extraction

form was used to capture demographic and other data regarding the infants from their existing medical records.

3.11 Data Management and Analysis

Table 1: Data Analysis Plan

Objective of the study	Data analysis
1. To determine the prevalence of CLP infants who failed to thrive after NRP enrollment	Descriptive data analysis using univariate level and presented in figures
2. To assess the maternal factors associated with infants' failure to thrive	Bivariate level of data analysis using cross-tabulation and determining the p-values that will reveal the levels of association at 95% confidence interval. Further analysis will be conducted at multi-variate to establish the likelihood of the occurrence of the outcome given the nutrition intervention
3. To assess the infant factors associated with failure to thrive	Bivariate level of data analysis using cross-tabulation and determining the p-values that will reveal the levels of association at 95% confidence interval. Further analysis will be conducted at multi-variate to establish the likelihood of the occurrence of the outcome given the nutrition intervention
4. To assess health system factors associated with failure to thrive	Bivariate level of data analysis using cross-tabulation and determining the p-values that will reveal the levels of association at 95% confidence interval. Further analysis will be conducted at multi-variate to establish the likelihood of the occurrence of the outcome given the nutrition intervention

3.12 Quality Control Measures

To ensure validity and reliability of the study, the research assistants were purposely selected and trained before data collection; the supervisor-approved tools were tested on a homogeneous population of caregivers of children admitted at Mulago hospital, Mwanamugimu rehabilitation unit and any inconsistencies were corrected. During and after data collection, all the completed

tools were checked for accuracy and consistency before being kept under lock and key to ensure that no unauthorized persons were beyond access.

3.13 Ethical issues

The research proposal was first of all submitted to Clarke International University-Research Ethics Committee (CIUREC), the School of Nursing and Midwifery (SON) for approval and grant of an introductory letter for data collection to CoRSU Hospital. Following that, permission was granted by CoRSU Rehabilitation Hospital Research Committee to conduct this study. Informed consent was obtained from all the participants respondents before administering the questionnaire. Meanwhile, strict confidentiality was observed and assured throughout the research process by use of anonymous identification other than names and restrictions of access to the data collected, to persons not involved in the study.

3.15 Dissemination of Results

The research report will be submitted to the School of Nursing and Midwifery, CIU; C.I.U library and to CoRSU Rehabilitation hospital administration and to the participants of the study at CoRSU Hospital. As opportunity avails, the study findings shall be presented in conferences and workshops in order to benefit infants with Cleft Lip and Palate.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.0 Introduction

This chapter presents results got from a study that assessed the prevalence and factors associated with Cleft Lip and Palate Infants' Failure to Thrive after Nutritional Rehabilitation at CoRSU Rehabilitation Hospital, Entebbe. The study population was caregivers of CLP infants who had been previously admitted at CoRSU nutrition rehabilitation unit and got discharged. The respondents were therefore followed up using the telephone contacts left with the health facility. However, in trying to contact them, the research team found out that not all of them were reachable by phone call as most of the telephone contacts were either no longer existing on the respective networks or were out of service. Thus, only forty-four respondents were enrolled out of the calculated sample size required for the study which was a 29.5% response rate.

4.1 Thriving of Infants with Cleft Lip and Palate after nutritional rehabilitation

Forty, four respondents voluntarily consented and were enrolled in the study. The assessment of the infants' nutritional status was measured using variables such as the age of the child, sex, medical history of infections and any other medical condition, breastfeeding, and immunization. Meanwhile, thriving was measured using the bodyweight of the infant on review after being discharged from the nutrition rehabilitation unit at CoRSU. All the results are presented in Tables and figure

Table 1: Descriptive statistics of CLP infants' age in months

Descriptive Statistics						
Variables	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	STD	Statistic
Age of the child	44	1	24	4.70	0.860	5.704
Total	44					

Source: Primary field data, 2021

The descriptive statistics of the cleft lip and palate infants presented in Table 2 indicate that the youngest child was one month while the oldest was 24 months with the mean age of 4.7 months, ± 5.7 years of standard deviation from the mean.

Table 2: Univariate analysis of nutrition status of the CLP Infants

Variables	Category	Frequency	Percentage (100%)
Sex of Infant	Male	19	43.2
	Female	25	56.8
Medical history			
Existing Infections	Fever	2	4.5
	RTI	6	13.6
	Skin infections	2	4.5
	Cough and flue	4	9.1
	Diarrhea	5	11.4
	No infection	25	56.8
Underlying medical conditions	HIV/AIDS	1	2.3
	URTI	1	2.3
	Swelling in the ear	1	2.3
	Cardiac malformation	1	2.3
	Fever	1	2.3
	Measles	1	2.3
	No medical condition	38	86.4
Malnutrition	Yes	42	97.7
	No	2	4.5
Nutrition status	Moderate	24	54.5
	Normal	2	4.5
	Severe	18	40.9
Breastfeeding	Yes	20	45.5
	No	24	54.5
Infections	Yes	19	43.2
	No	25	56.8
	Total	44	100.0

Source: Primary field data, 2021

According to Table 3, more than half 25(56.8%) of the infants were female while 19(43.2%) were male infants. On the assessment of the medical history, it was found out that more than half 25(56.8%) of the infants never had a history of infections while 6(13.6%) had respiratory tract infections, 2(4.5%) skin infections, 4(9.1%) cough and flu, and 5(11.4%)diarrhea. Further assessment for underlying medical conditions revealed that only one infant was HIV positive, one had upper respiratory tract infections, swelling in the ear, cardiac malformation, fever, measles while the majority 38(86.4%) never had any serious medical conditions. More than half 24(54.5%) of the infants had moderate malnutrition, 18(40.9%) were severely malnourished and only 2(4.5%) were well nourished. On the other hand, only 20(45.5%) of the infants were

breastfed as compared to the 24(54.5%) that were not. Overall, 19(43.2%) of the infants had suffered infections as compared to the 25(56.8%) that never had any infections.

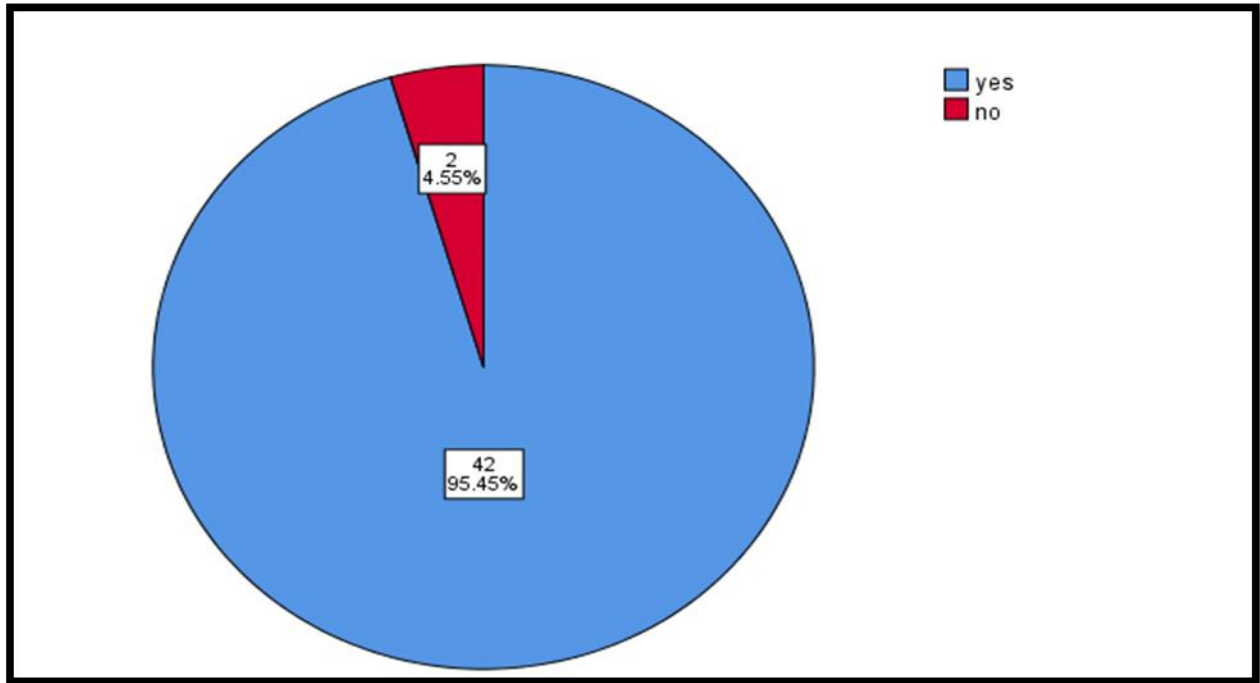


Figure 2 showing the proportion of CLP infants with Failure to Thrive after nutritional rehabilitation

The results presented in Figure 2 indicate that almost all 42(95.45%) of the infants failed to thrive after nutrition rehabilitation as compared to only 2(4.55%) of them that thrived.

Further still, another respondent stated:

“Due to lack of social support from the children’s fathers, some mothers get depressed and end up neglecting infants by failing to clean the feeding utensils, etc which exposes them to Gastrointestinal infection which leads to frequent diarrhoea. More so, because of the child's appearance some mothers are stigmatized, and lose the morale of taking care of the children; while some mothers came in when they have been rejected by the family members due to giving birth to a baby who is not looking good. All the above is also expected to happen when they go back home”.

(Response from KI 2)

Table 3: Bivariate analysis of infants' health conditions associated with failure to thrive

Variables	Category	Failure to thrive			χ^2	P-value
		Yes	No	Total		
Age of the child	<6months	32(76.2%)	2(100%)	34(77.3%)	0.616	1
	6-12 months	6(14.3%)	0(0.0%)	6(13.6%)		
	13-18 months	1(2.4%)	0(0.0%)	1(2.3%)		
	19-24 months	3(7.1%)	0(0.0%)	3(6.8%)		
Child sex	Male	18(42.9%)	1(50.0%)	19	0.04	1
	Female	24(57.1%)	1(50.0%)	25(56.8)		
Infections	Fever	2(4.8%)	0(0.0%)	2(4.5%)	16.343	0.023*
	RTI	6(14.3%)	0(0.0%)	6(13.6%)		
	skin infections	2(4.8%)	0(0.0%)	2(4.5%)		
	Cough and flue	4(9.5%)	0(0.0%)	4(9.1%)		
	Diarrhea	3(7.1%)	2(100%)	5(11.4%)		
	No infection	25(59.5%)	0(0.0%)	25(56.8%)		
Medical conditions	HIV/AIDS	1(2.4%)	0(0.0%)	1(2.3%)	0.331	1
	RTI	1(2.4%)	0(0.0%)	1(2.3%)		
	Swelling in the ear	1(2.4%)	0(0.0%)	1(2.3%)		
	CM	1(2.4%)	0(0.0%)	1(2.3%)		
	Fever	1(2.4%)	0(0.0%)	1(2.3%)		
	Measles	1(2.4%)	0(0.0%)	1(2.3%)		
	NMC	36(85.7%)	2(100%)	38(86.4%)		
Nutrition status	Moderate	23(54.8%)	1(50.0%)	24(54.5%)	5.584	0.09*
	Normal	1(2.4%)	1(50.0%)	2(4.5%)		
	Severe	18(42.9%)	0(0.0%)	18(40.9%)		
Breastfeeding	Yes	19(45.2%)	1(50.0%)	20(45.5%)	0.017	1
	No	23(54.8%)	1(50.0%)	24(54.5%)		
Infections	Yes	10(23.8%)	0(0.0%)	10(22.7%)	0.616	1
	No	32(76.2%)	2(100%)	34(77.3%)		
Total		42(100%)	2(100%)	44(100%)		

Source: Primary field data, 2021 * statistically significant at $P < 0.05$,

The results presented in Table 4 reveal that children who had had infections had a significant association with failure to thrive after nutrition rehabilitation ($p=0.023$). However, the differences in the proportion of thriving exist across all the categorized variables. Meanwhile, 76.2% of the children aged less than 6 months failed to thrive as compared to 14.3% among those 6 to 12 months, 2.4% (13-18 months), and 7.1% (19-24 months).

Correspondingly, a result got from key informant interview revealed that the age of infants is associated with failure to thrive after nutritional rehabilitation.

“Infants between 0-3 months tend to have diarrhoea and vomiting and high fevers and mothers tend to fear feeding them and those from 6 to 2yrs tend to have cough and Flu recurrently”. **(Response from KI 3)**

Meanwhile, 4.8% of the infants that had a fever, 14.3% with respiratory tract infections, 4.8% skins, 9.5% cough and flue, and 7.15 that had diarrhea failed to thrive after nutrition rehabilitation. Similarly, 54.8% as compared to 2.4% of the infants with moderate and normal nutrition status failed to thrive ($p=0.09$), as 45.2% of the infants that were breastfed failed to thrive.

4.2 Caregiver Factors Associated with Cleft Lip and Palate Infant Failure to Thrive

Table 4: Univariate analysis of caregiver factors associated with cleft lip palate infants

Variables	Category	Frequency	Percentage (100%)
Age	18-25 years	8	18.2
	26-35 years	30	68.2
	36-49 years	6	13.6
Gender	Male	8	18.2
	Female	36	81.8
Occupation	Housewife	24	54.5
	Businessperson	11	25.0
	Peasant farmer	6	13.6
	Student	1	2.3
	Professional	2	4.5
Level of income	High	6	13.6
	Middle	19	43.2
	Low	19	43.2
Place of residence	Urban	19	43.2
	Rural	25	56.8
Relationship	Parent	42	95.5
	Grandparent	1	2.3
	Guardian	1	2.3
Learned how to feed a child	Yes	42	95.5
	No	2	4.5
Frequency of feeding a child	One hourly	13	29.5
	Two hour-ly	27	61.4
	Three hour-ly	2	4.5
	Not applicable	2	4.5
Attained sufficient knowledge	Yes	39	88.6
	No	5	11.4
Feel while feeding the child	Comfortable	35	79.5
	Uncomfortable	9	20.5
Practice farming	Yes	25	56.8
	No	19	43.2
Challenge preparing feeding	Yes	32	72.7
	No	12	27.3
	Total	44	100.0

Source: Primary field data, 2021

The descriptive characteristics of the caregivers presented in Table 5 indicate that most 30(68.2%) of the respondents were aged 26 - 35 years while eight (18.2%) were aged 14 - 25

years and six (13.6%) were aged 36 -49 years. According to gender, it is revealed that a vast majority 36(81.8%) were female as compared to eight (18.2%) that were male.

Table 5: Bivariate analysis of caregiver factors associated with CLP infants' failure to Thrive

Variables	Category	Failure to thrive			χ^2	P-value
		Yes	No	Total		
Maternal age	18-25 years	8(19.0%)	0(0.0%)	8(18.2%)	0.978	1
	26-35 years	28(66.7%)	2(100%)	30(68.2%)		
	36-49 years	6(14.3%)	0(0.0%)	6(13.6%)		
Occupation	Housewife	24(57.1%)	0(0.0%)	24(54.5%)	3.841	0.277
	Businessperson	10(23.8%)	1(50.0%)	11(25.0%)		
	Peasant farmer	5(11.9%)	1(50.0%)	6(13.6%)		
	Student	1(2.4%)	0(0.0%)	1(2.3%)		
	Civil servant	2(4.8%)	0(0.0%)	2(4.5%)		
Level of income	High	6(14.3%)	0(0.0%)	6(13.6%)	0.63	1
	Middle	18(42.9%)	1(50.0%)	19(43.2%)		
	Low	18(42.9%)	1(50.0%)	19(43.2%)		
Place of residence	Urban	18(42.9%)	1(50.0%)	19(43.2%)	0.04	1
	Rural	24(57.1%)	1(50.0%)	25(56.8%)		
Learned feeding	Yes	40(95.2%)	2(100%)	42(95.5%)	0.1	1
	No	2(4.8%)	0(0.0%)	2(4.5%)		
Frequency of feeding						
	One hourly	13(31.0%)	0(0.0%)	13(29.5%)	2.419	1
	Two hour-ly	25(59.5%)	2(100%)	27(61.4%)		
	Three hour-ly	2(4.8%)	0(0.0%)	2(4.5%)		
	Not applicable	2(4.8%)	0(0.0%)	2(4.5%)		
Attain sufficient knowledge						
	Yes	37(88.1%)	2(100%)	39(88.6%)	0.269	1
	No	5(11.9%)	0(0.0%)	5(11.4%)		
Feeling while feeding child						
	Comfortable	33(78.6%)	2(100.0%)	35(79.5%)	0.539	1
	Uncomfortable	9(21.4%)	0(0.0%)	9(20.5%)		
Practice farming	Yes	23(54.8%)	2(100%)	25(56.8%)	1.592	0.498
	No	19(45.2%)	0(0.0%)	19(43.2%)		
Total		42(100%)	2(100%)	44(100%)		

Source: Primary field data, 2021

As seen from Table 6 above, when the caregivers were assessed on their residence and availability of feeds; attitudes towards children with CLP; and their occupation and levels of income in order to establish their association with CLP infants' failure to thrive, the results revealed that more than half 24(54.5%) of the respondents were housewives, 11(25.0%) business people, 6(13.6%) peasant farmers, 1(2.3%) student and 2(4.5%) were professional civil servants.

In addition, the results reveal that whereas 25(56.8%) of the respondents were rural residents while 19(43.2%) were residing in the urban area, 19(43.2%) of the respondents had a middle level income, another 19 (43.2%) had lower level of income as compared to only 6(13.6%) with a high level of income.

Regarding the caregivers' knowledge on feeding of the CLP infant, the results show that almost all 42 (95.5%) of the respondents agreed that they had learned how to feed the child while only 2 (4.5%) of them did not learn. Meanwhile, 13(29.5%) of the respondents that learned feeding infants agreed that they do it hourly, 27(61.4%) fed every after two hours while only 2(4.5%) fed their infants every after three hours. Nonetheless, while the majority 39(88.6%) of the respondents agreed they had sufficient knowledge about feeding a child, only 5(11.4%) had insufficient knowledge.

The above results correspond with results got from a key informant interview which revealed that:

"Some mothers are not good at taking care of their CLP infants at first but when they are taught, they become super in taking care of their infants. Meanwhile, some mothers are not good and I think this is because they are young and they are seeing such a condition for the first time. They are also scared of the child because of the appearance this makes them neglect the child in regards to feeding and hygiene leading to gastrointestinal infections".

(Response from KII 1)

Meanwhile, 32(72.7%) of the respondents confirmed that they got challenges in preparing, feeding, and getting feeds for the children while 12(27.3%) of them did not experience any challenge. This concurred with results from key informant interviews, which revealed that:

"Some infants get infections because some mothers sometimes keep the baby's feeding bottle when they are dirty and I think when they go home it becomes worse because no one monitors them".

(Response from KI. 4)

In regard to occupation and income levels, the study found out that 57.1% of the respondents who were housewives had infants that failed to thrive as compared to 2.4% observed among businesspeople, 11.9% peasant farmers, 2.4 %among students and 4.8% registered among civil servants. However, failure of the infants to thrive was found the same among respondents with middle and low monthly income earners (42.9% vs 42.9%) respectively while only 14.3% of those with the high level of income had infants that failed to thrive.

Further assessment on whether the respondents practiced farming, showed that more than half 25(56.8%) of them carried out farming while 19(43.2%) disagreed. Despite this fact, some infants failed to thrive due to lack of food for feeding the entire family and consequently used the baby's feed for the entire family as reported:

"When the mothers reach home because of big family they use the entire package given to the Cleft Lip and Palate infant and you find that within one week there is nothing to give to this baby, leading to failure to thrive.

(Response from KI. 1)

Similarly, another respondent stated that

"Some mothers when they are given the feeding package and two months to come back, they come back when even the weight is less than what it was before discharge. If you go deeper to ask them why the child is not thriving, they tell the truth that they used the feeds as a family and went back to feed the baby on the usual family feeds".

(Response from KII 3)

On the other hand, when the caregivers' attitudes towards feeding infants with CLP were assessed, a significant 35(79.5%) of the respondents indicated good attitudes by agreeing that they were comfortable feeding infants while nine (20.5%) were uncomfortable, implying that they did not like it. Conversely, key informant in-depth interviews revealed that the majority of the respondents had poor attitude towards feeding their infants as stated below:

"In most cases at first when mothers have just delivered, the attitude is very poor towards their baby's due to negative cultural beliefs, stigma, and lack of social support but after visiting the hospital and being taught, the attitude changes in some mothers".

(Response from KI. 2)

Similarly, another respondent stated that:

“Because the condition is new to them and they feel like they are alone, the attitude is always bad due to lack of support but those who come with a second person they have a good attitude. Most of them come as single mothers. I have ever seen one who came with post-traumatic disorder and did not even want to look at the baby”.

(Response from KI. 4)

The above results are also in line with a key informant’s report as a nutritionist at CoRSU as hereby stated:

“Some mothers used to come with their children who were severely malnourished and when they were taught, they coped well and feed their infants so well where infants thrived. However sadly, the children used not to thrive because of some mothers’ poor attitude. The nurses could put in efforts to even wake them up in the night and they refused to wake up to feed their infants. Some mothers could drink the children's milk.

(Response from KI 1)

However, when assessed concerning residence & availability of feeds, the results indicated that 57.1% of the respondents that stayed in rural had infant failure to thrive unlike 42.9% failure registered among those who stay in urban areas. Meanwhile, 59.5% of the respondents that fed their infants two hourly, and 31.0% that fed hourly registered infant failure to thrive.

4.3 Infant Factors Associated with CLP Infants' Failure to thrive

Table 6: Univariate analysis of infant factors associated with infant failure to thrive

Variables	Category	Frequency	Percentage (100%)
Suckling	Yes	2	4.5
	No	42	95.5
BottleFeeding Ability	Yes	2	4.5
	No	42	95.5
A child able to hold nipple and suck breast	Yes	1	2.3
	No	43	97.7
A child able to feed with the bottle	Yes	43	97.7
	No	1	2.3
The child had the following conditions			
Difficult in swallowing	Yes	16	36.4
	No	28	63.6
Persistent cough and flue	Yes	29	65.9
	No	15	34.1
Aspiration pneumonia	Yes	1	2.3
	No	43	97.7
	Total	44	100.0

Source: Primary field data, 2021

The assessment of infant factors as shown in Table 7, reveals that only two (4.5%) had the sucking ability and bottle-feeding ability, 1(2.3%) had oropharyngeal dysphasia and two (4.5%) had recurrent infections. In addition, the study result indicated that only one (2.3%) of the infant was able to hold nipple and suck breast as compared to their counterparts 43(97.7%) that could not.

On the other hand, the study finding showed that 43(97.7%) of the infants were able to feed with a bottle unlike one (2.3%) that failed. Relatedly, key informant interviews revealed that

"All children with CLP come in when they are unable to breastfeed due to suckling inability but with the special bottle, feeding mothers help them to feed by squeezing the milk out of the bottle".

(Response from KI 3)

An assessment of whether the infants had some health conditions revealed that 16(36.4%) had Oropharyngeal dysphagia (difficulty in swallowing), 29(65.9%) had persistent cough and flue and one (2.3%) had aspiration pneumonia.

Table 7: Bivariate analysis of infant factors associated with CLP infants' Failure to thrive.

Variables	Category	Failure to thrive			χ^2	P-value
		Yes	No	Total		
Suckling	Yes	2(4.8%)	0(0.0%)	2(4.5%)	0.1	1
	No	40(95.2%)	2(100%)	42(95.5%)		
Bottle Feeding Ability	Yes	2(4.8%)	0(0.0%)	2(4.5%)	0.1	1
	No	40(95.2%)	2(100%)	42(100%)		
Oropharynx	Yes	1(2.4%)	0(0.0%)	1(2.3%)	0.049	1
	No	41(97.6%)	2(100%)	43(97.7%)		
Recurring infections	Yes	2(4.8%)	0(0.0%)	2(4.5%)	0.1	1
	No	40(95.2%)	2(100.0%)	42(95.5%)		
A child able to suck	Yes	1(2.4%)	0(0.0%)	1(2.3%)	0.049	1
	No	41(97.6%)	2(100%)	43(97.7%)		
Able to feed with the bottle					0.049	1
	Yes	41(97.6%)	2(100%)	43(97.7%)		
	No	1(2.4%)	0(0.0%)	1(2.3%)		
Swallowing Difficulty	Yes	14(33.3%)	2(100%)	16(36.4%)	3.667	0.127
	No	28(66.7%)	0(0.0%)	28(63.6%)		
Cough and flue	Yes	27(64.3%)	2(100%)	29(65.9%)	1.084	0.54
	No	15(35.7%)	0(0.0%)	15(34.1%)		
Pneumonia	Yes	1(2.4%)	0(0.0%)	1(2.3%)	0.049	1
	No	41(97.6%)	2(100%)	43(97.7%)		
Total		42(100%)	2(100%)	44(100%)		

Source: Primary field data, 2021

Further still, Table 8 statistics indicate that there is an insignificant association observed between infant factors and failure to thrive. However, there were differences in proportion of infant's failure to thrive according to the variables examined. For example, 66.7% of the respondents whose infants never had difficulty in swallowing failed to thrive. In addition, 97.6% of the respondents agreed that their infants never had pneumonia but still failed to thrive. However, 64.3 % of the respondents whose infants had flue failed to thrive. On the contrary, 97.6% of the infants that we' were able to feed with bottles failed to thrive.

4.4 Health Facility Factors Associated with Cleft Lip Palate Infants' Failure to thrive

Table 8: Univariate analysis of health facility factors associated with CLP infants' failure to thrive

Variables	Category	Frequency	Percentage (100%)
Availability of the following			
Standard operating procedures	Yes	19	43.2
	No	25	56.8
Feeding guide	Yes	21	47.7
	No	23	52.3
Policy	No	44	100.0
The facility provides training about feeding infants			
	Yes	34	77.3
	No	10	22.7
If yes, who offers the training?	Doctors	6	13.6
	Nurses	28	63.6
Not applicable		10	22.7
Facility has educational materials	Yes	40	90.9
	No	4	9.1
Nutritionists provided health talks	Yes	36	81.8
	No	8	18.2
Facility provides home care visit	Yes	11	25.0
	No	33	75.0
Availability of following appliances:			
Special feeding bottles	Yes	40	90.9
	No	4	9.1
Feeding appliances	Yes	6	13.6
	No	38	86.4
Feeding guide	Yes	18	40.9
	No	26	59.1
Health workers assess infant feeding challenges	Yes	41	93.2
	No	3	6.8
Assess child early to identify feeding challenges	Yes	41	93.2
	No	3	6.8
	Total	44	100.0

Source: Primary field data, 2021

From Table 9 above, the frequency distribution of health facility factors examined reveals that 19(43.2%) of the respondents agreed to the presence of standard operating procedures for feeding infants, 21(47.7%) had feeding guide while 100% of the respondent indicated that they never had the policy. However, 34(77.3%) of the respondents agreed that their health facility

provided them training about feeding their infants while 10(22.7%) never had training. Meanwhile, more than half 28(63.6%) of the respondents revealed that they had received training from nurses in the last 6 months while six (13.6%) received it from doctors the last month.

Furthermore, the results indicate that 40(90.9%) of the respondents agreed that their health facility had educational materials such as posters, flip charts used for training caregivers and health workers while 4(9.1%) never had. In addition, the majority 36(81.8%) of the respondents agreed that nutritionists provided health talks concerning feeding infants with cleft lip and palate unlike eight (18.2%) that never had health talks. Meanwhile, 11(25.0%) of the respondents agreed that their health facility provided home care visits after the discharge of the infants while the majority 33(75.0%) had never experienced it.

Moreover, concerning the provisions that CoRSU offered to caregivers of infants, almost all (90.9%) of the respondents agreed that the facility provided them with special feeding bottles, 6(13.6%) had feeding appliances and 18(40.9%) had feeding guides. The study also examined whether the health workers conducted timely identification of feeding challenges of the infants and the result revealed that 41(93.2%) of the respondents agreed health workers were able to timely assess feeding challenge and identify it early enough.

Table 9: Bivariate analysis of health facility factors associated with CLP infants' failure to thrive

Variables	Category	Failure to thrive			χ^2	P-value
		Yes	No	Total		
Caregiver use the followings						
Operating procedures						
	Yes	19(45.2%)	0(0.0%)	19(43.2%)	1.592	0.498
	No	23(54.8%)	2(100%)	25(56.8%)		
Guide for care givers						
	Yes	21(50.0%)	0(0.0%)	21(47.7%)	1.913	0.489
	No	21(50.0%)	2(100%)	23(52.3%)		
Health facilities offer training						
	Yes	33(78.6%)	1(50.0%)	34(77.3%)	0.887	0.407
	No	9(21.4%)	1(50.0%)	10(22.7%)		
If yes, who offers training?						
	Doctors	6(14.3%)	0(0.0%)	6(13.6%)	1.392	0.6
	Nurses	27(64.3%)	1(50.0%)	28(63.6%)		
	Not applicable	9(21.4%)	1(50.0%)	10(22.7%)		
Availability of educational materials						
	Yes	39(92.9%)	1(50.0%)	40(90.9%)	4.243	0.175
	No	3(7.1%)	1(50.0%)	4(9.1%)		
Provision of health talks						
	Yes	35(83.3%)	1(50.0%)	36(81.8%)	1.426	0.334
	No	7(16.7%)	1(50.0%)	8(18.2%)		
Provide home care						
	Yes	11(26.2%)	0(0.0%)	11(25.0%)	0.698	1
	No	31(73.8%)	2(100%)	33(75.0%)		
Special feeding bottles						
	Yes	38(90.5%)	2(100%)	40(90.9%)	0.21	1
	No	4(9.5%)	0(0.0%)	4(9.1%)		
Feeding Appliances						
	Yes	6(14.3%)	0(0.0%)	6(13.6%)	0.331	1
	No	36(85.7%)	2(100%)	38(86.4%)		
Feeding guide						
	Yes	18(42.9%)	0(0.0%)	18(40.9%)	1.451	0.505
	No	24(57.1%)	2(100%)	26(59.1%)		
Health workers able to assess infants						
	Yes	39(92.9%)	2(100%)	41(93.2%)	0.153	1
	No	3(7.1%)	0(0.0%)	3(6.8%)		
Health workers assess children early enough						
	Yes	40(95.2%)	1(50.0%)	41(93.2%)	6.149	0.133
	No	2(4.8%)	1(50.0%)	3(6.8%)		
Total		42(100%)	2(100%)	44(100%)		

Source: Primary field data, 2021

According to Table 10, health facility factors were not significantly associated with infant failure to thrive while variation in the proportion of failure to thrive was observed. Noticeably, 64.3% of the respondents whose training on feeding was offered by nurses had infant failure unlike those that were trained by doctors (14.3%). This can be attributed to the respondent's knowledge and attitudes towards the infants. Relatedly, a key informant stated that:

“Some mothers when they are taught, they follow the instructions of feeding two hour-ly; but later, some come back when they even don't know how to measure milk after having been taught. In addition, they are given packages for feeding the infants but when they reach home, they share it with the whole family and when all the feeds are done, they start giving the CLP infant things like posho, which cannot help the infant to thrive.

(Response from KI. 1)

On the contrary, almost all the respondents (92.9%) that had education materials at the health facility and a vast 90.5% of those that had special feeding bottles reported infant's failure to thrive after nutritional rehabilitation as much as 83.3% of the respondents that had had health talks.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

This chapter presents the discussion of our study findings in comparison with other scholarly studies on prevalence and factors associated with infants' failure to thrive after nutrition rehabilitation.

5.1 Prevalence of CLP Infants' Failure to Thrive after nutritional rehabilitation

Forty-four respondents participated in this current study and out of this sample, a vast majority (95.5%) of the respondents had infants that failed to thrive after nutrition rehabilitation. This is contrary to a previous study conducted in Uganda among caregivers of CLP infants at this same hospital (CoRSU) that revealed that it was 27.2% (Katusabe *et al.*, 2018). The discrepancy in the two studies could most likely be attributed to the different years of when the study was undertaken with especially in consideration of the grave effects of the Covid19 pandemic which necessitated a complete lockdown over the period of the current study. The study specifically found that the CLP infants' average weights were significantly lower both at outpatient visit and before operation with observed prevalence of 68%.

This study findings also happen to be of a much higher percentage as compared to other studies by Chattopadhyay *et al.*, (2021) which revealed that 53% of the children suffered from severe malnutrition including failure to thrive; and Sebanjo *et al.*, (2011) who found a prevalence of 23.1% in Nigeria.

On the contrary, the prevalence in United States of America was found to be 17% at first but was later reduced to 7% (Baylis *et al.*, (2018).

5.2 Caregiver Factors Associated with CLP Infants' Failure to Thrive

The study findings revealed a relatively close association between the caregivers' knowledge on feeding of the CLP infant, and failure to thrive among the infants with almost all 42 (95.5%) of the respondents agreeing that at CoRSU, they had learned how to feed the infants. This also resulted in the majority 39 (88.6%) of the respondents reporting that they had sufficient knowledge about feeding a child, which results were confirmed by the key informants. This finding is in line with the results of another study by Tungotyo *et al.*, (2017a) among infants with CLP attending CoRSU hospital Uganda, which showed that having caregivers who were lacking

nutritional information was among the factors associated with malnutrition in CLP children. This aggravates the situation for the sick infants both pre- and post-operatively as they will lack the ideal nutrients needed to thrive. Therefore, providing nutritional information is very important to the caregivers / mothers to the CLP infants. However, our study finding contradicts with results got from a study by Srivastav et al., (2021), which revealed caregiver dissatisfaction with the knowledge provided.

On the contrary, a considerable 72.7% of the respondents indicated that they had challenges in getting feeds, preparing and feeding CLP infants; meaning that these caregivers lacked appropriate knowledge of feeding CLP infants. This resulted in CLP infants experiencing FTT. Similarly, a study by Nabatanzi, (2013), to determine feeding practices, techniques and maternal feeding knowledge among children with oral clefts revealed that most mothers continued to have inadequate knowledge on feeding their infants after training. Although the reasons for infants' failure to thrive after caregivers' training on feeding infants with CLP was beyond the scope of this study, in the current study setting this could be due to caregivers' negative attitudes towards CLP infants, low level of education, lack of social socio-economic support or even depression.

This is made worse by the practice by health educators writing the nutritional information on a card during the nutritional health education sessions, instead of verbally explaining to the client. This practice may not help caregivers who are unable to read or write. This is in agreement with a study by Wijekoon, Herath and Mahendran, (2019) that took place in the United Arab Emirates and Indonesia, to assess the mothers awareness on feeding, growth and development of infants with CLP which found out that nutrition messages were mostly written in English, but did not favor most care givers as they could not read in English. Consequently, many caregivers could not access nutrition health education services in order to help their infants to thrive.

Therefore, health care workers should ensure that each caregiver of the CLP is well taught and should also make recordings of the nutrition health information in the local languages so that caregivers can take them home, listen to it and understand at their convenient time so as to improve their knowledge and skills towards feeding their CLP infants as recommended by CoRSU.

Occupation And Level of Income

In addition, the study finding revealed that infants' failure to thrive varied according to the occupation and level of income of the respondents. More than half (57%) of respondents whose infants had FTT in spite of nutritional rehabilitation, were housewives by occupation. This may largely be attributed to the fact because of the sickness of the infant, some caregivers who were previously employed, had to abandon their former occupations in order to take care of the infant. Therefore, being a housewife may mean that the caregiver may not have direct access to their own sufficient income for support and purchase of babies' feeds apart from the feeds given at the health facility and what the husband can provide; which severely affects the quality of nutrition for the infant. Being a housewife can also be a disadvantage because although the caregivers are at home, their many roles of taking care of the husband and other family members, carrying out household chores and attending to other marital pressures may deter them from proper and adequate feeding of the CLP infant as compared to working caregivers who leave the infant care to a paid-up caretaker.

This study finding concurs with a study by Göymen et al., (2016), in Turkey where it was revealed that a big percentage of CLP infants have low income levels and yet because of the long-term treatment, the caregivers needed adequate financial support. The finding is also in line with a study by Lundgren and Uhrenfeldt, (2014), among malnourished children in Uganda, which revealed that lack of financial resources was among the major risk factors that affected children's nutritional status and caused FTT. It also resulted in many caregivers failing to come for child reviews and seeking medical care too late. On the other hand, due to low income, feeds may be less in addition to feeding difficulties and because it is a continuous situation in the family, an infant fail to thrive.

This implies that for CLP infants to thrive steadily, there is need for encouraging and supporting caregivers who are full-time housewives with income generating activities, getting market for their farm products, tailoring and hair dressing to improve on their source of income. In addition, there is need for as health workers to carry out family counselling for families of CLP infants so as to involve household members, relatives and spouses to support caregivers during treatment of CLP infants both at the health facility and at home.

Noticeably, the study established that failure of the infants to thrive affected the middle-income earners as much and low monthly income earners, 42% respectively while only fourteen percent of those with the high level of income had infants that failed to thrive ($p > 0.05$). This study finding corresponds with result got from a study in Turkey by Göymen, Akbulut and Sökücü, (2016), which revealed that a bigger percentage of CLP infants come from low income family levels. This was evidenced by some caregivers being given food packages for the CLP infants but when they reach home, they share it with the whole family and when all the feeds are done, they start giving the infant available local foods like posho which cannot help the child to thrive.

This implies that because of the long-term treatment, the caregivers need extra financial support. Thus, CoRSU hospital management should engage caregivers in income generating activities like small-scale farming and home gardening to improve availability and accessibility to food; and should also consider not only giving nutrition feeds but also availing caregivers with seeds of the nutritious feeds to be planted at home instead of relying on monthly food rations. This will improve feeding of CLP infants and the entire family. CoRSU hospital management

Residence And Availability of Feeds

Relatedly, the study revealed that fifty seven percent of the respondents that stayed in rural areas had higher infant failure to thrive unlike forty two percent among those who stay in urban areas ($p > 0.05$), which means that respondents that stay in rural areas had higher proportion of infant's failure to thrive after nutrition rehabilitation. Similar results were reported from a study conducted in America which revealed that the initial feeding experiences of parents who resided in the rural areas showed that the majority of parents reported initial difficulties with feeding their infants (Snyder and Ruscello, (2019). Our study also concurs with that done in India by Mossey and Little, (2009), who established that inequalities existed, both in access to and quality of cleft care including nutritional rehabilitation of infants with distinct differences in urban versus rural access.

In recent years however, the situation has been significantly improved through, the intervention of non-governmental organizations such as Smile Train and Transforming Faces.

The variation in our study finding to the others above is likely attributed to the fact that there exists only one nutrition rehabilitation centre for CLP infants in Uganda; which can only benefit

infants whose caregivers can physically easily access it. This implies that CLP infants that stay outside Kampala, Wakiso and Mukono find it hard to frequently visit CoRSU hospital due to long distance and transport implications. The study findings indicate that there is need for CoRSU to seek information, partnerships and donor assistance from various sources. For instance, the Ministry of health, in partnership with Christal blind mission (CBM) and Smile Train should establish nutrition rehabilitation units in all the regional referral hospitals to improve accessibility to those services instead of traveling long distances which the majority of caregivers could not afford.

Attitudes Towards Feeding Infants with CLP

Further still, this study revealed that CLP infants' failure to thrive following nutritional rehabilitation, was associated with the caregivers' attitudes towards feeding infants with CLP.

The finding is much in line with a Zambian study by Durman, (2020), in which the feeding behavior and maternal low self-esteem resulted into feeding problems for babies with CLP who consequently also suffered the biggest weight losses. Poor weight gain was also associated further with a mother's low perception of herself and her tendency towards depression. All these emotional setbacks may result into the caregivers usually biological mothers, failing to generate breastmilk or even to totally feed the infants. If the mother is stressed, it is automatic that she can fail to produce breast milk, and this will lead to a child's failure to get enough calories, which leads to failure to thrive.

This findings also concurs with another study by Srivastav et al., (2021) in Europe which revealed that mothers of infants with CLP had reported higher stress and more challenges with feeding and growth despite receiving early team care and feeding interventions. This is made worse by the low self-esteem brought about due to the children's appearance, lack of social support, coupled with community stigma and work overload in an effort to take care of the CLP infant as required by CoRSU. At CoRSU some mothers come in when they have been rejected by the family members due to giving birth to a baby who is not 'looking good', which is also bound to happen when they return back home.

The above discussions imply that as much as health education services are offered to improve the knowledge and attitudes of caregivers, it does not automatically translate into changing the nutrition status of the CLP infants. Therefore, the researcher recommends that following the

discharge of infants from CoRSU, the health care workers should conduct continuous nutrition health education counseling specifically on feeding of infants with CLP. This can be achieved by telephone contacts or by scheduling at least monthly home visits to encourage and support the caregivers and other family members to support the infants and the caregivers.

5.3 Infant Factors Associated with CLP Infants' Failure to Thrive

Our study findings revealed that overall, an infant with CLP not having suckling or bottle-feeding ability, having Oropharyngeal dysphagia and being infected with any disease like respiratory tract infections, skin infections, cough, flu and diarrhea had, all had some association with CLP infant's failure to thrive. This is in line with Pandya and Boorman (2001) whose study revealed that malnutrition in these children with CP+/-L is majorly associated with feeding difficulties. Similarly, a study by Takemura *et al.*, (2002) done in Tokyo indicated that depending on the CLP defect, and its location on the body, an infant is prone to infection specifically respiratory tract infections, due to the wide opening and may be the difficulty in swallowing where aspiration is very possible. Owing to the feeding difficulties, mothers face challenges while feeding them, for example, choking and nasal regurgitation which can also lead to life-threatening infections of the lungs. Inadequate nutrition also predisposes the infant to frequent infections.

On the other hand, the study findings indicate that overall, there is an insignificant association between infant factors and failure to thrive. In addition, there were discrepancies in proportion of infant's failure to thrive according to the variables examined which were beyond the scope of our study. For example, 97.6% of the respondents who reported that their infants never ever had pneumonia still failed to thrive; as was true with a similar percentage (97.6%) of the infants that were able to feed with bottles that failed to thrive and a considerable 66.7% of the respondents whose infants never had difficulty in swallowing but failed to thrive. The research recommends more research in these areas is in order to fill the knowledge gaps.

Nevertheless, as Goswami, Bhushan and Jangra, (2016) observed, proper feeding of infants helps to prevent childhood diseases, infection and promotes healing from any other sickness. In a child with CLP, nutrition is the first priority as for any other child in order to grow and improve

the health particularly before they undergo surgery and rehabilitation. It is recommended that CLP infants should be regularly screened for disease conditions such as upper respiratory tract infections, HIV and other diseases to prevent infections so that they are promptly treated before they affect the nutritional status of the children.

5.4 Health facility Factors Associated with CLP Infants' Failure to Thrive

According to findings, health facility factors were not significantly associated with CLP infants' failure to thrive although variations in the proportion of failure to thrive were observed. However, as much as half of the respondents agreed that they had operating procedures and a feeding guide for caregivers, the facility still registered infant failure to thrive after nutritional rehabilitation. Moreover, there was also reported lack of policy on feeding of infants with CLP. This finding is contrary to a related study conducted in Egypt by Nasar, Amer and Aly, (2018) which showed that when mothers were given a feeding protocol, later evaluated for its effectiveness, it showed an improvement on the knowledge and practice of mothers regarding feeding of their CLP infants. Therefore, there is need for health care workers to provide caregivers with feeding guides which they should be in position to demonstrate during health education sessions.

The study finding further revealed that a vast majority (90.9%) of the respondents agreed that the facility provided them with special feeding bottles, feeding appliances and that the health workers conducted timely assessment and identification of feeding challenges of the infants. On the contrary, almost all the respondents (92.9%) that had education materials at the health facility and a vast 90.5% of those that had special feeding bottles reported infant's failure to thrive after nutritional rehabilitation as much as 83.3% of the respondents that had health talks.

This is in disagreement with the results of a study conducted in Uganda that revealed that infants failed to latch and suckle breast while feeding, but when mothers used soft squeezable bottle, they reported improved feeding of cleft lip and palate infants (Nabatanzi et al., 2021). The discrepancy between the two studies may be attributed to the possibility that health workers only offer feeding packages and feeding bottles while the caregivers have never observed any nurse

with feeding guide for the caregivers. Noticeably, 64.3% of the respondents whose training on feeding was offered by nurses had infant failure unlike those that were trained by doctors.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents summary of the study findings including conclusion and recommendations.

6.1 Conclusions

This study was carried out to establish the prevalence and factors associated with cleft lip and palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation Hospital, Entebbe. This study looked at the prevalence of CLP infants who fail to thrive after nutritional rehabilitation, the caregiver factors, infant factors and health facility factors infants associated with failure to thrive. It was found out that:

- the prevalence of CLP infants' failure to thrive after nutrition rehabilitation was very high (95%).
- There was a relatively close association between the caregiver factors and failure to thrive among CLP infants. However, there were differences observed in the proportion of infant's failure to thrive where by caregivers' knowledge on feeding of the CLP infant and having poor attitudes towards feeding infants with CLP, had higher proportions; while being a housewife and having low level of income; as well as residence in rural areas were found to be other barriers influencing CLP infants' failure to thrive.
- Regarding infant factors associated with CLP infant's failure to thrive after nutrition rehabilitation. our study established that not having suckling or bottle-feeding ability, having Oropharyngeal dysphagia and recurring infections increased the CLP infants' failure to thrive after nutritional rehabilitation.
- Health facility factors were not significantly associated with CLP infants' failure to thrive although variations in the proportion of failure to thrive were observed. The availability of the policy and feeding guidelines regarding infants with CLP as well as provision of feeding appliances, utensils and a feeding guide to caregivers; and timely assessment and identification of feeding challenges of the infants, important as they are, had no significant association with infants' failure to thrive.

6.2 Recommendations

Based on the study findings, the following are recommended to improve thriving of infants with cleft lip and palate:

CoRSU Management

- CoRSU management should engage caregivers in rural areas in income generating activities like small-scale farming and home gardening to improve availability and accessibility to food; and should avail caregivers with seeds of the nutritious feeds to be planted at home instead of relying on monthly food rations. This will provide caregivers with extra financial support for the long-term treatment and feeding of CLP infants and the entire family.
- Following the discharge of infants from CoRSU, the health care workers should conduct continuous nutrition health education counseling on feeding of infants with CLP through telephone contacts or by scheduling at least monthly home visits to encourage and support the caregivers and to counsel the entire family about the importance of CLP infants feeding.
- There is need for health care workers to provide caregivers with feeding guides which they should be in position to demonstrate during health education sessions.
- There is need for encouraging and supporting caregivers who are full-time housewives to get skill for income generating activities such as tailoring and hair dressing to improve on their sources of income.

CoRSU healthcare workers

- To prevent stigma and depression Health workers at CoRSU should carry out family counselling for parents and families of infants with cleft lip and palate so as to involve household members, relatives and spouses to support caregivers during treatment of CLP infants both at the health facility and at home.

- Health care workers should ensure that each caregiver of the CLP is well educated with nutritional information and should make recordings of the health information in the local languages so that caregivers can take them home, so as to listen to and understand it at their convenient time.
- CLP infants should be regularly screened for disease conditions such as upper respiratory tract infections, HIV and other diseases to prevent infections so that they are promptly treated before they affect the nutritional status of the children.

Ministry of Health

- Ministry of health, in partnership with Christal blind mission (CBM) and Smile Train should establish nutrition rehabilitation units in all the regional referral hospitals to improve accessibility to those services instead of caregivers traveling long distances which the majority of caregivers could not afford.

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APPENDIX I :CONSENT FORM (IN ENGLISH)

We are asking you to take part in a research study called: **To determine the prevalence and factors associated with Cleft Lip and Palate infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2019.**

The person who is in charge of this research study is **Christine Namugerwa**. The research will be conducted at CoRSU rehabilitation hospital.

Purpose of the study

The purpose of this study is to:

1. To determine the prevalence of CLP infants who fail to thrive after NRP enrollment at CoRSU rehabilitation hospital by December 2019.
2. To assess maternal factors associated with infants' failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2019.
3. To assess infants' factors associated with failure to thrive after nutritional rehabilitation at CoRSU rehabilitation hospital by December 2019.
4. To assess the health system factors associated with failure to thrive at CoRSU rehabilitation hospital by December 2019.

Study Procedures

You are being asked to participate in this study, as you are a caregiver who can help us to better understand factors associated with failure to thrive after nutritional rehabilitation in Uganda.

If you take part in this study, you will be asked to:

- Take part in a one-time, one-on-one, semi-structured interview;
- The interview will take approximately 15 minutes;
- The interview will take place at a location most convenient to you as the participant;
- The interview will be transcribed, in the form of field notes, to ensure accuracy in reporting your statements;

Benefits

There may be no direct benefits associated with your participation in the study, but the information you will provide will be useful in planning and organizing health awareness campaigns on quick recovery and thriving of children with CLP in Uganda.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

No research participants will be compensated in any form.

Privacy and Confidentiality

We will keep your study records private and confidential. Certain people may need to see your study records. By law, anyone who looks at your records must keep them completely confidential. The only people who will be allowed to see these records are:

The research team, including the Principal Investigator and those involved with the study.

I may publish what I have learnt from this study. If I do, I will not include your name. I will not publish anything that would let people know who you are.

Voluntary Participation / Withdrawal

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

You can get the answers to your questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, or experience an adverse event or unanticipated problem, contact the researcher on 0704910357

If you have questions about your rights as a participant in this study, general questions, or have complaints, concerns or issues you want to discuss with someone outside the research, call the CIUREC Chairperson Dr. Samuel Kabwigu on (0779610100) & the executive secretary of UNCST on (0414 -705500) respectively.

Consent Section for the Participant

I..... voluntarily agree to participate in this research study. I have heard the purpose and nature of the study explained to me verbally and I have had the opportunity to ask questions about the study.

I understand that all information I provide for this study will be treated confidentially and in any report on the results of this research my I identity will remain anonymous

Signature..... Date.....

CONSENT FORM (IN LUGANDA)

ENDAGAANO EYOKUKIRIZIGANYA

Nze Ngasikakidwa, nzikirizaokwetabamukunonyerezakuno.
Mpuliddeomugasone'kikaekyokunonyerezangaomusawobwanyonyode. Era
nfunyeno'mukisaokubuuzaebibuzoebikwatakukunonyerezakuno.

Ntegeddentibulikyenyogerakomukunonyerezakuno, kijjakubakyankiso, era
nebinavaamubyonaebikwatakunangamuntuyange, byonabijjakusigalangebimanyidwa.

..... e rinyalyo'muzadde/omugenzaOmukono/ekinkumu

Enakuzomwezi

APPENDIX II QUESTIONNAIRE (IN ENGLISH)

Answer the questions below by either ticking in the box or filling in the space provided.

SECTION A: The caregiver factors associated with cleft lip and palate infant' failure to thrive

1. Age in years

- (a) 18-25
- (b) 26-35
- (c) 36-49
- (d) Others specify.....

- 2. Gender:** Male Female

3. Marital status

- (a) Married
- (b) Single mother
- (c) Widowed
- (d) Divorced /Separated
- (e) Cohabiting
- (f) Other specify.....

4. What is your occupation?

- (a) House wife
- (b) Business person
- (c) Peasant farmer
- (d) Student
- (e) Professional civil servant

- 5. Level of income:** High level Middle level Low level

6. Where do you stay?.....

- (a) Urban
- (b) Rural

7. How are you related to the child?

- (a) Parent
- (b) Grand parent
- (c) Guardian
- (d) Volunteer
- (e) Other specify

8. Knowledge related to feeding a child with CLP

1. Did you learn how to feed the child?

- (a) Yes
- (b) No

If yes narrate how it is being done.....

2. How frequent is the child supposed to feed in a day?

- (a) 1 hourly
- (b) 2hourly
- (c) 3hourly
- (d) Other specify

3. Do you think you attained enough knowledge about feeding the child?

- (a) Yes
- (b) No

If no, why do you think so?

4. How do you prepare the child's feeds?

.....
.....
9. Attitude of a caregiver towards feeding a child with CLP

1. How did you feel while preparing the feeds and feeding the child?

(a) Comfortable

(b) Uncomfortable

If _____ uncomfortable _____ why?

.....
.....
10. The availability of feeds to children

1. Do you practice farming at home?

(a) Yes

(b) No

2. If yes in the above question which type of food do you always plant?

.....
.....
3. If no, how do you get food for the family to survive?

.....
.....
4. Which type of food do you eat most as a family?

.....
.....
5. Did you get any challenges in preparing, feeding and getting the feeds for the child?

(a) Yes (b) No

If yes what happened?

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

SECTION B: Infant factors associated with CLP infants Failure to thrive after nutritional rehabilitation

- Suckling ability
- Bottle feeding ability
- Oropharyngeal dysphagia
- Recurring infections

1. Was the child able to hold the nipple and suckle the breast?

(a) Yes:

(b) No:

2. Were you able to feed the child with the bottle and teat?

(a) Yes

(b) No

If no
why?.....
.....
.....

3. Did the child have:

- (a) Difficulty in swallowing
- (b) Persistent cough and flue

(c) Aspiration pneumonia

Any other medical condition apart from CLP? If any specify.....
.....
.....

SECTION C: Health facility factors associated with CLP infants' failure to thrive after nutritional rehabilitation.

1. Availability of the policy regarding feeding practices of infants with CLP

1. Does the facility own the following documents, concerning feeding practices among infants with CLP?

- (a) Standard operating procedures
- (b) Feeding guide for care givers
- (c) Policy

2. Does the facility provide trainings/workshops about feeding infants with CLP to the staff? Yes No

If yes in the above question, have any of these staff received training in the last six months?

- (a) Doctors
- (b) Nurses
- (c) Nutrition assistant

3. Does the facility have educational materials like posters, flip charts, which are used to train caregivers/ health workers?

- (a) Yes
- (b) No

4. What is the method used for giving information about feeding infants with cleft lip and palate?.....

.....
.....

5. Do the nutritionist/nurse provide a health talk, concerning feeding infants with CLP?

- (a) Yes
- (b) No

If yes how often is the health talk given in a week?.....
.....

6. Does the health facility provide home care visits after the discharge of the infant with CLP? (a) Yes (b) No

If yes, how often does the nutritionist/nurse visit the patient after discharge?
.....
.....

2. Provision of feeding appliances, special utensils and a guide in relation to feeding infants with CLP, to caregivers.

Does the facility provide the items below, for the caregivers to use when feeding infants with CLP?

- | | | |
|---------------------------------------|-----|----|
| (a) Special feeding bottles and teats | Yes | No |
| (b) Feeding appliances | Yes | No |
| (c) Feeding guide | Yes | No |

3. Timely identification of feeding challenges by the health workers.

- 1. Are the health workers able to assess the infants' feeding challenges of infants with CLP?
(a) Yes (b) No
- 2. Do the health workers assess the child early enough to identify the feeding challenges of infants with CLP infants? (a) Yes (b) No

If no explain why.....
.....
.....
.....

QUESTIONNAIRE(IN LUGANDA)

1. Olinaemyakaemeka?

(e) 14-25

(f) 26-35

(g) 36-49

2 Okolamulimukki?

(a) Mukyaalawa waka

(b) Musubuuzi

(c) Mulimi

(d) Muyizi

(e) Mukozi mu govument

3 Wasomakyenkanakki?

(a) Pulayimare

(b) Siniya

(c) Setendekero

(d) Tewali

4 Omwanaakuyita atya?.....

(a) Maama

(b) Taata

(c) Senga

(d) Kojja

(e) Baaba

5 Obeera wa?.....

(a) Mukyaalo

(b) Mukibuga

AKATUNDU B: OBUKUGU MUKULISA OMWANA.

1. Wayigirizibwakungerieyo'kulisamuomwana?

(a) Yye

(b) Nedda

Bwobaokirizantiwayigirizibwa, nyonyolaengerigyekikolebwamu.....

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

Wayigirizibwaokuteekateekaebiyokulyaebyo'mwana?

(a) Yye

(b) Nedda

Bwoobangawayigirizibwa,

nyonyolangabwoteeketeekaebiyokulya.....

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

.....Omwanaalinaokulyabuliluvanyumalwassawameka?

(a) Emu

(b) Bbiri

(c) Satu

Oba sawandalanyonyola.....

.....

2. Olowoozawafunaobukuguobumala mu byendisayomwana?

(a) Yye

(b) Nedda

Bweba nedda, nyonyolalwakiolowoozabwotyo

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

.....
.....
3. Osubilawaliteeseteeseotya ebyokulyabyo'mwana?

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

AKATUNDU C: ENDOWOOZAKUBYA ENDIISA YO MWANA

1. Wawulirangaotyangaoteekateekaebiyokulyabyo'mwanaawamuno'kumuliisa?

(a) Bulungi

(b) Bubi

Bwobawawulirangabubinyonyolalwakki.....

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

2. Watwaalangaekyokulisaomwanangaekisumuluzo mu bulamubwe?

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

AKATUNDU D: OBUVO BWEBYOKULYA EBYO'MWANA

1. Olimulimi?

(a) Yye

(b) Nedda

2. Bwebayyemukibuuzoekyowaggulu, mmerekkigyemusingaokulima?

.....
.....

3. Bwebaneddamukibuuzonumba emu waggulu, nyonyolangabwofunaebiyokulyaeri
aba'makaago.....

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

4. Musingakulyammerekkingaamaka?

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

Wafunakookusomozebwakwonamukuteekateeka, okuliisaawamu ne
mukufunaebyokulyabyo’mwana?

(a) Yye

(b) Nedda

Bwebayyenyonyolakikiekyabaawo

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

SECTION B: Infant factors associated with CLP infants’ Failure to thrive after nutritional rehabilitation

-Obusoboziobwo’kuyonka

-Obusoboziobwo’kunywerakunywanto

-Okukalubilirwamu’kusa

-Endwaddeendala

1. Omwanayaliasobolaokukwataobulungienywantoe’y’bbeerenyonka?

(a) Yye

(b) Nedda

2. Waliosobolaokunywesaomwanangaokozesaecupa ne nywanto?

(a) Yye

(b) Nedda

Bwebaneddanyonyola lwaaki

(a) Yye (b) Nedda

Bwebayyeemilundiemekaegisomesebwaabajabi mu sande emu?.....

5. Edwaliroliwerezaabasawomumakagabalwadde, okubakeberakongabasiibulwa?

(a) Yye (b) Nedda

Bwebayye, milundiemekaomusawogyalambulaomulwaddemumwezi?

6. Edwaliroliwaebyo'kukozeabinowamangaeriabajabiokubikozeasangababiliraa baanabanakimu?

(a) Eccupangakulikoenywantoejenjawulo

(b) Endagiliroeyo'kulisaomwana

7. Abasawobalinaobusoboziobukeberaomwananebazuulaobuzibumukulyakwe?

(a) Yye (b) Nedda

8. Abasawobakeberaomwanamubuddeokuzuulaobuzibuomwanabwalinamu'kulya?

(a) Yye (b) Nedda

Bwebaneddanyonyolalwaaki?

APPENDIX III: KEY INFORMANT INTERVIEW GUIDE

- 1) What position do you hold at CoRSU Hospital?
- 2) How long have you worked in CoRSU Hospital?
- 3) In your opinion, how are infants with CLP thriving after nutrition rehabilitation in your facility?
- 4) What problems have you experienced concerning failure to thrive in CLP infants?
- 5) What are the caregiver factors associated with failure to thrive of infants with cleft lip palate?
- 6) What are the infant factors associated with failure to thrive of infants with cleft lip palate?

7) Are there any health facility factors associated with failure to thrive of infants with cleft lip palate?

If so, what are they and how have you handled them at CoRSU?

Thank you for your participation and responses in this research study

APPENDIX IV: DATA EXTRACTION FORM

NAME OF HOSPITAL:

PATIENT ID NUMBER:

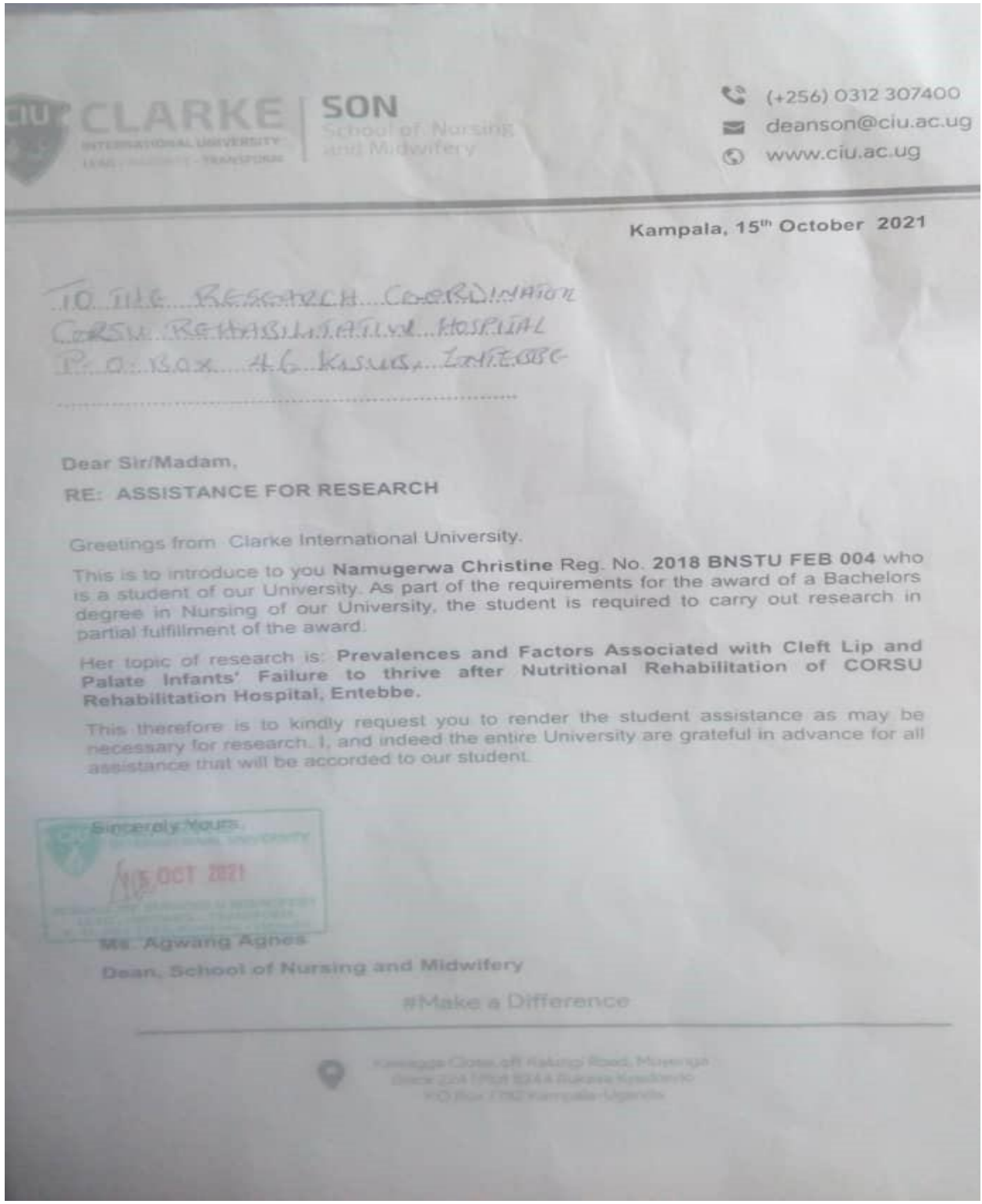
AGE:

TYPE OF MALFORMATION:

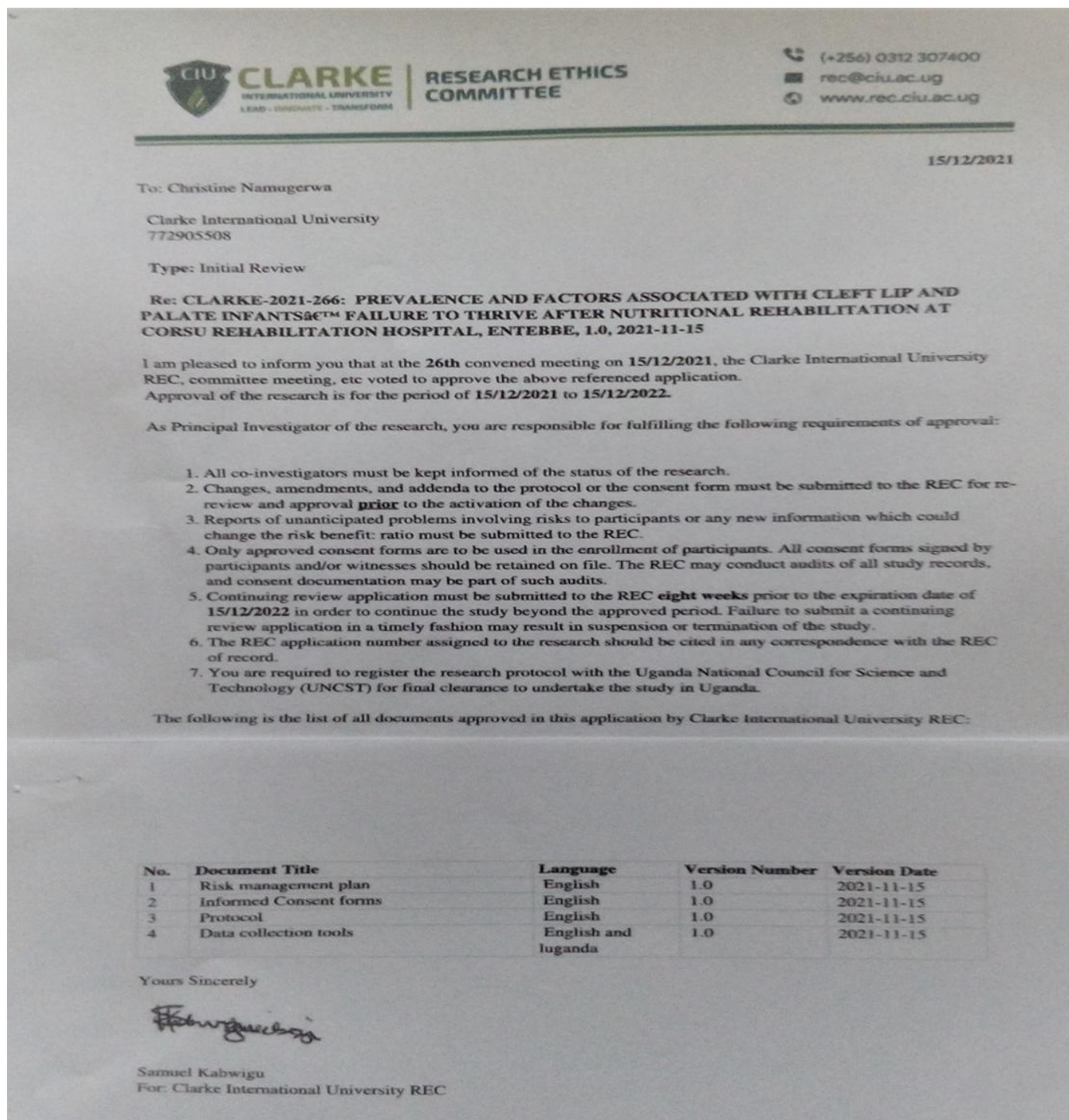
NUTRITION ASSESSMENT OF INFANTS

DATE OF 1ST ASSESSMENT		DATE OF REVIEW		
WEIGHT				
Weight on admission	Weight on discharge		Weight on review	
SOCIAL AND FAMILY HISTORY		MEDICAL HISTORY		
		Infection;		
		Any other medical condition;		
MALNUTRITION	YES	NO		
BREASTFEEDING	YES	NO		
IMMUNIZATION	YES	NO		
INFECTION	YES	NO		
NUTRITION PLAN				

APPENDIX V:REQUEST FOR DATA COLLECTION LETTER



APPENDIX VI: APPROVAL LETTER FROM THE CIU RESEARCH ETHICS COMMITTEE



APPENDIX VII: APPROVAL FOR DATA COLLECTION LETTER

CoRSU

Comprehensive Rehabilitation Services For People with Disability in Uganda

11th November 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

**RE: APPROVAL LETTER TO CONDUCT RESEARCH AT CoRSU
REHABILITATION HOSPITAL**

The purpose of this letter is to grant **Christine Namugerwa**, a student pursuing a Bachelors degree in Nursing at Clarke International University, to conduct research at CoRSU Rehabilitation Hospital.

After review of the study protocol, the CoRSU Research Committee hereby approves the research proposal and grants permission for **Christine Namugerwa** to collect data for the study titled, "**Prevalence and Factors Associated with Cleft Lip and Palate Infants Failure to Thrive after Nutritional Rehabilitation at CoRSU Rehabilitation Hospital, Entebbe**" at CoRSU Rehabilitation Hospital.

Sincerely,



Dr Moses Fisha Muhumuza

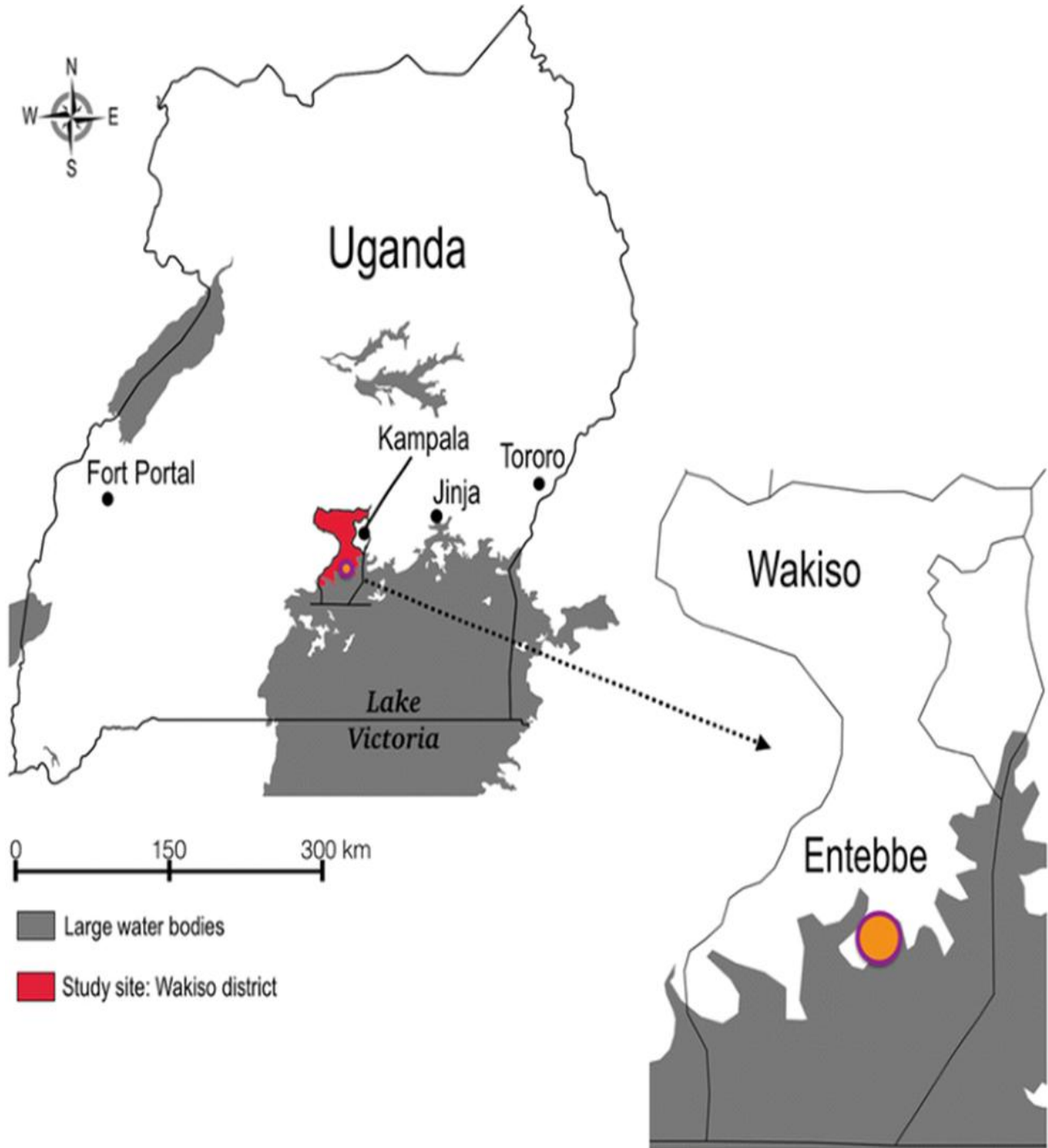
Chairperson, Research Committee Medical Director/Deputy CEO CEO

Also for Dr Doreen


Dr Doreen Birabwa-Male



APPENDIX VIII: MAP OF UGANDA SHOWING WAKISO DISTRICT



APPENDIX IX:MAP OF WAKISO DISTRICT SHOWING CoRSU HOSPITAL

