

**PREVALENCE OF INFECTIONS IN CHILDREN WITH ACUTE MALNUTRITION
ADMITTED ON PAEDIATRIC WARD OF FORT PORTAL HOSPITAL
FROM JULY TO DECEMBER 2017**

BY

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**A DESERTATION SUBMITTED TO THE FACULTY OF CLINICAL MEDICINE AND
DENTISTRY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF A DEGREE OF BACHELOR OF MEDICNE AND
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UNIVERSITY WESTERN CAMPUS**

FEBRUARY 2018

DECLARATION

I Tumusiime Ronald (BMS/0280/123/DU), a student of Bachelor of Medicine and Surgery at Kampala International University hereby declare that this research dissertation is original and has never been submitted to any institutions of higher learning or university for award of a degree or any other purpose.

Appropriate referencing has been made where citation of other people's work has been done.

Signature

Date

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Tumusiime Ronald

APPROVAL

I hereby approve that this dissertation, “prevalence of infections in children with acute malnutrition admitted on Paediatric ward of FPRRH” has been written under my supervision and is ready for submission to the research committee of Kampala International University.

Signed

Date

.....

.....

Supervisor

Professor; Manuel Silva Andres

DEDICATION

I dedicate this work to my beloved mother, my uncle Mugisa Paul, my relatives and friends for their continuous support and comfort they provided during difficult times when I lost my father who passed on just a few months ago and for their endless encouragement during the entire course of my studies.

ACKNOWLEDGEMENT

Am so grateful to the Almighty God for the gift of life, wisdom and the study opportunities He brought to me at times when I was hopeless and may the glory and praise be toward Him always.

I thank my supervisor **prof. Silva** for the ample time he sacrificed out of his busy schedule to collect, guide, instruct and give me fair suggestions Wright from the beginning to completion of this work.

With deep gratitude, I thank the administration of Fort Portal Regional referral Hospital for their hospitality throughout my final year of study programme and selfless support they provided whenever I called upon them.

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LIST OF ABBREVIATIONS

WHO	:	World Health Organization
IMAM	:	Integrated Management of Acute Malnutrition
HIV	:	Human Immunodeficiency Virus
AIDS	:	Acquired Immunodeficiency Syndrome
MAM	:	Moderate Acute Malnutrition
UTI	:	Urinary Tract Infections
MOH	:	Ministry of Health
SAM	:	Severe Acute Malnutrition
IDSR	:	Integrated Disease Surveillance and Response
UDHS	:	Uganda Demographic and Health Survey
PEM	:	Protein Energy Malnutrition
NRC	:	National Rehabilitation Centre
FPRRH	:	Fort Portal Regional Referral Hospital
FANTA	:	Food And Nutrition Technical Assistance
UNAP	:	Uganda Nutrition Action Plan
ARI	:	Acute Respiratory Infections
HMIS	:	Health Management Information System
AM	:	Acute Malnutrition
ANC	:	Antenatal care

OPERATIONAL DEFINITION

Acute	Any disease having a rapid (sudden) onset and following a short but severe course
Under nutrition:	Is the depletion of energy (calories) resulting from insufficient food intake over an extended period of time
Over nutrition:	Is the pathological state resulting from consumption of excessive quantity of food over an extended period of time
Chronic Malnutrition:	Is a form of malnutrition as a result of chronic hunger and insufficient nutrient supply leading to reduce linear growth in human development
Mortality Rate:	It is the number of deaths in a particular population.
Prevalence:	Number of cases at a given place in a given time
Health:	A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity

ABSTRACT

INTRODUCTION: Malnutrition is a major development and public health concern that affects both children and adults in Uganda. Under nutrition is a result of interplay of socioeconomic factors but largely caused by inadequate intake or poor absorption of nutrients in the body, it can be acute or chronic malnutrition. Acute malnutrition is a rapid onset condition characterized by bilateral pitting oedema or sudden weight caused by a decrease in food consumption and/or illness and can be divided into severe acute malnutrition and moderate acute malnutrition. Statistics show that 360000 children (2% nationally) are estimated to be acutely malnourished and nearly 125000 (34.7%) of them have severe acute malnutrition

Acute malnutrition may act as a direct cause of death or indirectly by increasing dramatically the number of deaths in children suffering from common childhood illness. Acute malnutrition is therefore an important co factor of infections, associated with immune deficiency respiratory muscle atrophy. SAM triples the risk of mortality from pneumonia, measles, diarrhea, and other infections.

OBJECTIVE; To determine the prevalence of infections among different forms of acute malnutrition and their impact in terms of mortality rate and duration of hospital stay.

METHOD; A quantitative retrospective and analytical survey was used aimed at collecting information about study subjects from nutritional files and other health information system management record books using a well prepared data collection sheet. The study analyzed data from 152 children below five years that were admitted on pediatric ward with acute malnutrition in my study period

RESULTS; Of 152 children, 90.8% had SAM and 9.2% MAM, among SAM children, 79% had non edematous and 21% edematous. The prevalence of diarrhea, UTI, ARI, Malaria, HIV, and other infections were 40%, 24%, 33%, 32%, 7.2%, and 15%.

CONCLUSION; Acute malnutrition is more prevalent and severe in younger than older children.

Non edematous form of SAM was found to be the most prevalent form of AM, followed edematous form and then MAM, however, edematous SAM was the most severe form of AM, with more chances of co morbidities (93%) and prolonged duration of hospital stay.

CHAPTER ONE

This chapter covers background of the study, problem statement, objectives of the study, research questions, significance and justification of the study, conceptual framework, the scope of the study and operational terms.

1.0 INTRODUCTION

Malnutrition is a major development concern in Uganda, affecting all regions of the country and most segments of the population. The current levels of malnutrition hinder Uganda's human, social, and economic development. Although the country has made tremendous progress in economic growth and poverty reduction over the past 20 years, its progress in reducing malnutrition remains very slow (UNAP 2011-2016).

Malnutrition is a term used literally to mean “bad nutrition”, and technically includes under nutrition and over nutrition, however, in our setting (developing countries) it is equivalent to under nutrition (IDSR Dec-2012).

Malnutrition is a major public health concern in Uganda that affects both children and adults (IMAM Dec-2010). Globally, maternal and child under nutrition are underlying causes of 3.5m deaths, including 35% of the disease burden in children <5years (IDSR Dec-2012).

Under nutrition is as a result of an interplay of socioeconomic factors but largely caused by inadequate intake or poor absorption of nutrients in the body. It can be acute or chronic malnutrition. Acute malnutrition is a rapid onset condition characterized by bilateral pitting oedema or sudden weight loss caused by a decrease in food consumption and/or illness.

Acute malnutrition is further subdivided into; severe acute malnutrition (SAM) and moderate acute malnutrition (MAM), SAM is characterized by presence of bilateral pitting edema or severe wasting (IMAM Dec-2010). The statistics show that 360,000 children (2% nationally) are estimated to be acutely malnourished and nearly 125000 (34.7%) of them have SAM (Uganda demographic health survey 2016)

Undernutrition is usually an outcome of 3 factors often in combination: household food supply, child caring practices, and access to health and water/sanitation services. In famine and emergency

settings, food shortage is the foremost factor, but in many countries with widespread under nutrition, more important causes might be repeated childhood infections, especially diarrheal diseases linked an unsafe environment and lack of exclusive breastfeeding, or inadequate complementary feeding practices, or the lack of time families have available for appropriate infant or maternal care (Nelson textbook of paediatrics 20th-edition).

1.1 BACKGROUND TO THE PROBLEM

Severe acute malnutrition may act as a direct cause of death or indirectly by increasing dramatically the number of deaths in children suffering from common childhood illnesses (IDSR Dec-2012). SAM is therefore an important co-factor of infections, associated with immune-deficiency and respiratory muscle atrophy. SAM triples the risk of mortality from pneumonia, measles, or diarrhea. Other common opportunistic infections associated with SAM include; skin dermatoses, Tuberculosis, Malaria among others (Gabriel A, Marko K, Serge B, Cecile S, Jan-2013)

The greatest risk of under nutrition occurs in the first 1000days of life, from time of conception to 24months of age, and this early damage to growth and development can have adverse consequences in later life on health, intellectual ability, school achievement, work productivity and earnings.

The most profound consequence of under nutrition is premature death. Fetal growth restriction together with suboptimal breastfeeding in the first month of life contribute to 19% of all deaths in children <5years (1.3million deaths/yr globally). The risk of child death from infectious diseases increases even with mild under nutrition, and as the severity of under nutrition increase, the risk increases exponentially. Under nutrition impairs immune function and other host defenses, consequently childhood infections are more severe and longer lasting in undernourished children and more likely to be fatal compared with same illnesses in well-nourished children. Also, infections can adversely affect nutritional status and young children can quickly enter a cycle of repeated infection and ever-worsening malnutrition (Nelson Textbook of paediatrics 20th edition volume 2 2010).

1.2 PROBLEM STATEMENT

While Uganda has made great strides in reducing poverty, the rates of malnutrition in children and mothers are still unacceptably high, compromising their health and survival. Malnutrition is the underlying cause of as many as 45% of child deaths in Uganda. Children who are malnourished are at a greater risk of infections (such as diarrhea and pneumonia), which in turn increases the risk of malnutrition. Low birth weight babies are four times more likely to die within the first month of life than other babies (FANTA III Sept-2014).

Despite the high incidence and mortality due to SAM worldwide, the burden of child mortality due severe malnutrition remains absent from the international health agenda and few countries, even in high prevalence areas have specific national policies aimed at addressing it comprehensively. Many sporadic surveys are being organized, but surveillance is currently poorly implemented and does not allow for interventions related to prevention and management of malnutrition (IDSR Dec-2012). And yet worse more, there is lack of literature regarding co morbidity pattern in SAM children (Hari S.Meshram, S.Manazir Ali, T.Shehab).

1.3 STUDY OBJECTIVES

1.3.1 Broad Objective

To determine the prevalence of infections in acutely malnourished children less than 5years of age

1.3.2 Specific Objectives

- To determine the prevalence of the different forms of acute malnutrition.
- To establish the relationship that exists between forms of acute malnutrition and likelihood to get infection
- To describe the implication of forms of acute malnutrition on period of hospital stay

1.4 RESEARCH QUESTIONS

1. What is the prevalence of infections in children with acute malnutrition?
2. Which form of severe acute malnutrition is more prevalent?
3. What relationship exists between the different forms of malnutrition and period of hospital stay as inpatients?

1.5 HYPOTHESIS

There is need for more information regarding co morbidities, since they are the reason behind high morbidity and mortality in children with acute malnutrition.

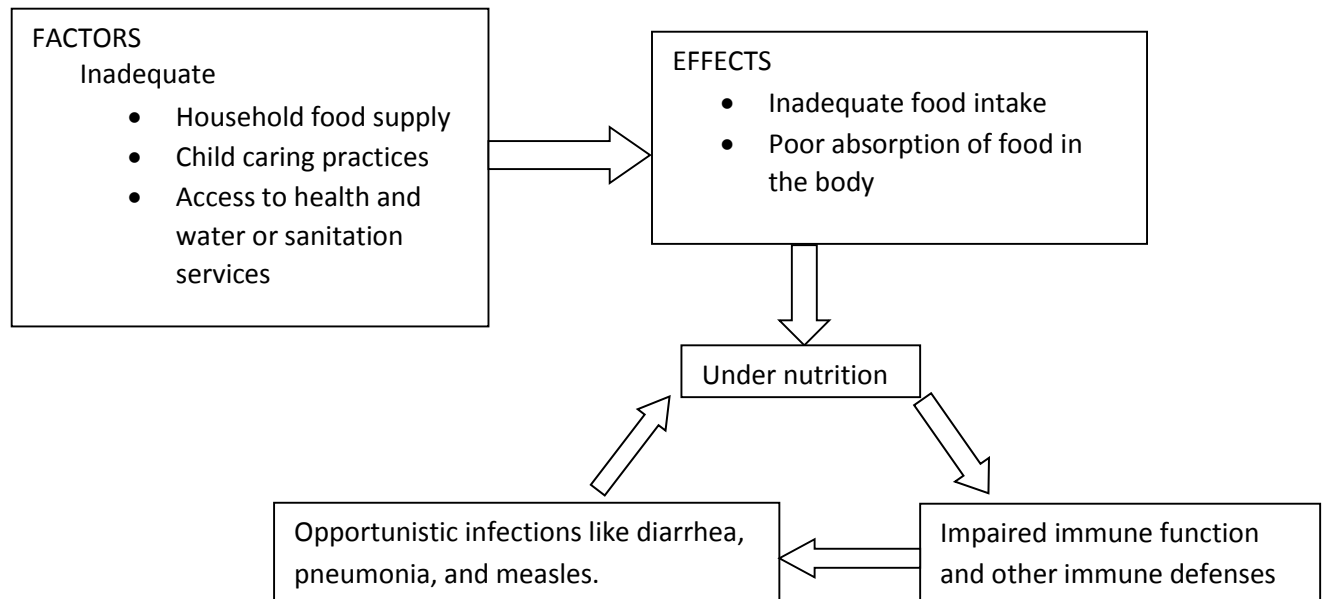
The tested hypothesis is; there is no relationship between prevalence of infections and severity of malnutrition in children.

1.6 JUSTIFICATIONS

Co morbidities are the reason behind high morbidity and mortality in SAM children and yet there is still lack of literature regarding infection pattern in acutely malnourished children. Infections identification and treatment in children is key step in reducing morbidity and mortality associated with acute malnutrition.

With the lack of data on infections found to be associated with severe malnutrition, this study is designed to provide information about the pattern of these infections for appropriate management plans and to create awareness to the responsible parastatal bodies and the public at large about the impact of these infections.

1.7 CONCEPTUAL FRAMEWORK:



Malnutrition therefore creates a vicious cycle with infection whereby infection worsens malnutrition and poor nutrition in return increases severity and prevalence of infection thus imparts the worst health complications.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

Malnutrition remains one of the most common causes of morbidity and mortality among children under five throughout the World. Worldwide, over 10 million children under the age 5 years die every year from preventable and treatable illnesses despite effective health interventions, at least half of these deaths are caused by malnutrition (Mengistu K, Alemu K, Destaw B 2013). Malnourished children have lowered immunity to infection; therefore, they are more likely to die from common ailments such as diarrheal diseases and respiratory infections and those malnourished children who survive are likely to suffer frequent illness, which adversely affects their nutritional status and locks them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability

There is lack of information about infections pattern in children with acute malnutrition, this section focuses therefore on reviewing and understanding the existing literature on co-morbidity patterns and prevalence in acute malnutrition of under 5years children at large.

2.1 PREVALENCE OF SEVERE ACUTE MALNUTRITION.

Food And Nutrition Technical Assistance (FANTA.2 2010) carried out analysis of the nutrition situation in Uganda, aiming at raising awareness of malnutrition in the country and to advocate for greater resources to be committed to addressing this serious problem. In this study, it was found out that undernutrition in Uganda affects over 2 million children under 5, of which 19% were undernourished, 16% were underweight and 6% wasted.

Another study done by Atuhaire, Michael at Mulago Hospital (2013) as a Thesis submitted to the school of Graduate Studies in partial fulfillment of the requirement for the award of the Degree of Master of Medicine in Paediatrics and Child Health of Makerere University found out the overall prevalence of acute malnutrition was 15% and severe acute malnutrition was 7%. The study population included all children attending to Mulago Assessment Centre in Mulago Hospital, Uganda where a total of 711 children aged 6 to 59 months were enrolled. This revealed the high prevalence of SAM among children under 5years with other associated consequences of infections.

The prevalence of SAM of 7% in this study is almost the same with the 6% of wasted children from the FANTA study above, therefore, signify the same magnitude of the problem.

A study done to assess the prevalence of malnutrition and associated factors among children aged 6-59 months at Hidabu Abote district, North shewa, Oroma region, Ethiopia in 2012 by Kebede Mengistu, Kassahun Alemu and Bikes Destaw from the Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Ethiopia in which a community based cross sectional study was conducted on 820 children aged 6-59 months from September 8-23, 2012 at Hidabu Abote district. The analysis of this study revealed that, 47.6%, 30.9% and 16.7% of children were stunted, underweight and wasted respectively. This percentage of wasted children is however, more than twice the figures in the above two studies in Uganda, showing an overwhelming problem magnitude in Ethiopia as compared to Uganda. And yet another related study done in Nakaseke and Nakasongola districts of Uganda to ascertain prevalence of malnutrition among underfives which also noted that 16.5% were wasted, and 13.5% underweight, the percentage of wasted children being more than double that depicted in FANTA II study although that of underweight children was just slightly higher. However, a Report from Monitor Uganda published on 13 june 2009, stated that, according to the 2008 Human Development Index, about 38% of children were underweight, 6% wasted. The above study comparisons strongly reveal a varsity degree in distribution of underweight and wasted SAM children but continue to show alarming levels of malnutrition in Uganda and Africa at large.

2.2 CO MOBIDITIES ASSOCIATED WITH SEVERE MALNUTRITION.

According to a study by Hari S.Meshram, S.Manazir Ali, T.Shehab in Nutritional Rehabilitation Centre (NRC) of Department of paediatrics, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh meant to study the co morbidities in severe acute malnutrition children admitted in NRC (March 2017). Total of 299 SAM children were included, co-morbidities were identified, investigated further and managed accordingly. It was found out that 90% of them had anaemia, 61% had diarrhea, 30% pneumonia, 30% Vitamin D deficiency, 10% cases of UTI, 10% Otitis Media and 13% were diagnosed of Tuberculosis. However, for the study of opportunistic infections, much emphasis is put on Diarrheal, Pneumonia, UTI, Otitis Media and Tuberculosis cases diagnosed above.

Also in a study done during the 2016 UDHS to determine the prevalence of malaria among children aged 6 to 59 months in which malaria RDTs were used, 30% of these children tested positive and the prevalence was found to be even much higher in rural children.

Another similar study done by Gabriel A, Marko K, Serge B, Cecile S in Jan 2013 to validate significance of routine use of antibiotics as management guidelines set by WHO (since 1999) for all children with SAM, even if they have uncomplicated disease with no clinically obvious infections. It was found out that, antibiotic therapy was effective in severe infection (pneumonia, tonsillitis, and purulent otitis media) with higher recovery rates. This study also compared prevalence of infection between SAM and non-SAM children, where HIV prevalence was around 40%, Bacteraemia levels ranged from 3% to 30%, mortality varied largely from 18% to 47.4% among SAM and 12% to 37.7% among non-SAM, showing a higher mortality rate among SAM children. Pneumonia, diarrhea, and urinary tract infections (UTI) among SAM children represented respectively 33.8%, 35.2%, and 24.1%. These percentages of infection show a greater magnitude among Sam children compared to the above study at NRC, adding more need for further study on the subject.

CHAPTER THREE

3.0 INTRODUCTION

This chapter explains the methodology of the study which includes the study design, study area, study population, sample size determination, sampling procedure, inclusion and exclusion criteria, definition of variables, research instruments, data collections, limitations of the study and dissemination of results.

3.1 STUDY DESIGN

The study was a quantitative retrospective and analytical survey aimed at analyzing the clinical data as recorded and presented in nutritional files of FPRRH on paediatric ward as from first july to 31st December 2017

3.2 STUDY AREA

The study was conducted at Fort Portal regional referral Hospital located on Kamwenge road in Fortportal municipality, Kabarole District, Western Uganda.

Kabarole district is located in Tooro Sub Region, Western Uganda. This location is approximately 235 kilometers by road North West from Mbarara, the largest town of Western Uganda. The location lies approximately 290 kilometers south West of Kampala, the Capital City of Uganda Fort Portal Regional Referral Hospital patients come from Kabarole, Ntoroko, Bundibugyo, Kamwenge, Kasese and Kyenjojo. Two maps are in appendices 1 and 2, 1 is showing the Kabarole district and its neighboring districts and 2 is showing the location of Fort Portal Regional Referral Hospital in Kabarole district.

Kabarole has many tribes which include batoro, bakonjo, bakiga, Bamba, Batuku among others.

3.3 STUDY SETTINGS AND POPULATION

The study was aimed at all patients who were admitted on Fort Portal Regional Referral Hospital paediatric ward with acute malnutrition in the specified time from July 2017 to Dec 2017

3.4 SAMPLE SIZE DETERMINATION

The sample size was calculated using a modified Kish-Leslie formula (Leslie Kish, 1965) which is $n = \frac{z^2 pq}{d^2}$. where

N = the desired sample size

Z = standard deviation set at 1.96 which corresponds 95% confidence interval

P = prevalence of acute malnutrition among children according to a study done by Atuhaire, Micheal at Mulago hospital in 2013 (15%)

Q = proportion of children who didn't have acute malnutrition (85%)

D = maximum acceptable sampling error (5%)

$$N = \frac{1.96^2 \times 0.15 \times (1-0.15)}{0.05^2} = 195$$

According to WHO (2007), sample 30%-100% is representative sample and so 78% of 195 is 152 was the considered sample size.

3.5 SAMPLING METHOD

A quantitative study was done by retrospectively considering all admitted cases of children with acute malnutrition within the study time frame.

3.6 STUDY VARIABLES

1. Age (in months); a) 0-12, b) 13-24, c) 25-36, d) 37-48, and e) 49-59
2. Gender; either male or female
3. Form of SAM (Edematous or non-edematous)
4. Associated infections.

3.7 TOOLS AND METHODS OF DATA COLLECTION

Data collection was done by visiting the Fort Portal Regional Referral Hospital paediatric ward nutrition unit and patients' HSIM forms records from July 2017 to Dec 2017, which i collected the required data. A brief, summarized and well prepared data collection sheet was then used to get the required information.

3.8 DATA PROCESSING AND ANALYSIS

Data were first analyzed manually using electronic calculators, then electronically by feeding into MS-Excel software and exported to SPSS for analysis to generate descriptive statistical information which was presented in the form of tables, figures, and charts.

3.9 INCLUSION AND EXCLUSION CRITERIA

3.9.1 INCLUSION CRITERIA

Only children below the age of five years and had acute malnutrition were included.

3.9.2 EXLUSION CRITERIA

Children who did not have acute malnutrition

Children above five years and prematures

Children whose records were missing or incomplete

3.10 LIMITATIONS OF THE STUDY

Inadequate resources and man power since the researchers were tasked to collect the information from three different books

Time was so limited since I did this research along my tight lectures and ward work schedule

Missing or gaps in information needed.

3.11 ETHICAL CONSIDERATION

This research project was done under the validity approved by the IREC of Kampala International University upon which the patient/participant-researcher relationship are held tight as per principles encouraged by this IREC.

The patients whose health data was collected were no longer in the clinic and the patients names were only used to direct the research assistants to the correct inpatient numbers, and rightful information meaning that the patients privacy were not directly confronted, however, if need arose for more details about the patients, their name abbreviations and hospital numbers were used.

Furthermore, I got a recommendation letter from the school faculty dean that made it easy to gain approval and permission from FRRH administration as well as ward incharge who ensured that ethical guidelines were respected throughout my data collection activity.

3.12 QUALITY CONTROL

I did to my maximum to make sure that the data collected was the right data to make me obtain reliable results. Among my maximum obligations was the work of getting all the required information about those patients so that no necessary information was left out.

CHAPTER FOUR

RESULTS

4.0 Introduction

In this study, a total of 152 subjects' records and data were analyzed and summarized according to the major variables. The results are presented below in terms of tables and charts to illustrate the information obtained from the study population. The results are summarized in terms of gender, age, type of acute malnutrition, form of SAM, and associated infections as well as period of hospital stay.

4.1 SOCIAL DEMOGRAPHICS

As shown in table 1 below, the sample size was 152 of which 78(52.3%) were males and 74(48.7%) females, 90.8% had SAM and 9.2% MAM, while 79% of SAM children had non edematous and 21% edematous form.

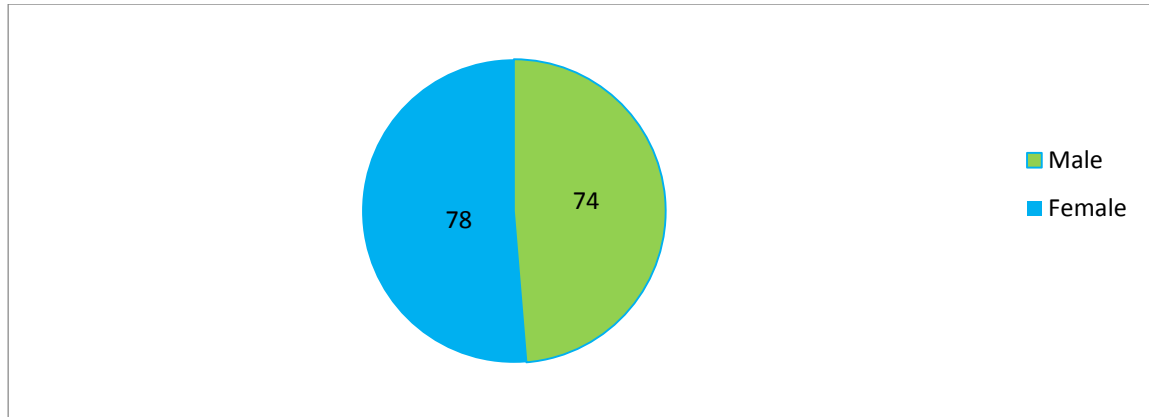
Table 1: DEMOGRAPHICS (n=152, %=100)**A TABLE SHOWING DEMOGRAPHICS OF THE STUDY POPULATION.**

VARIABLE	FREQUENCY	PERCENTAGE
GENDER		
MALE	78	52.3
FEMALE	74	48.7
TOTAL	152	100
AGE (IN MONTHS)		
O-12	65	42.8
13-24	40	26.3
25-36	28	18.4
37-48	11	7.2
49-59	08	5.3
TOTAL	152	100
TYPE OF AM		
SAM	138	90.8
MAM	14	9.2
TOTAL	152	100
FORM OF SAM		
EDEMATOUS	29	21
NON EDEMATOUS	109	79
TOTAL	138	100
INFECTION		
Diarrhea	62	40
ARI	50	33
Malaria	48	32
HIV	10	7.2
Others	23	15
UTI	37	24.1%^s

Table 1: DEMOGRAPHICS (n=152, %=100)

Figure 1. A pie chart showing Sex study subjects

N=152 respondents



74 respondents (48.7%) were females while 78 (52.3%) were males.

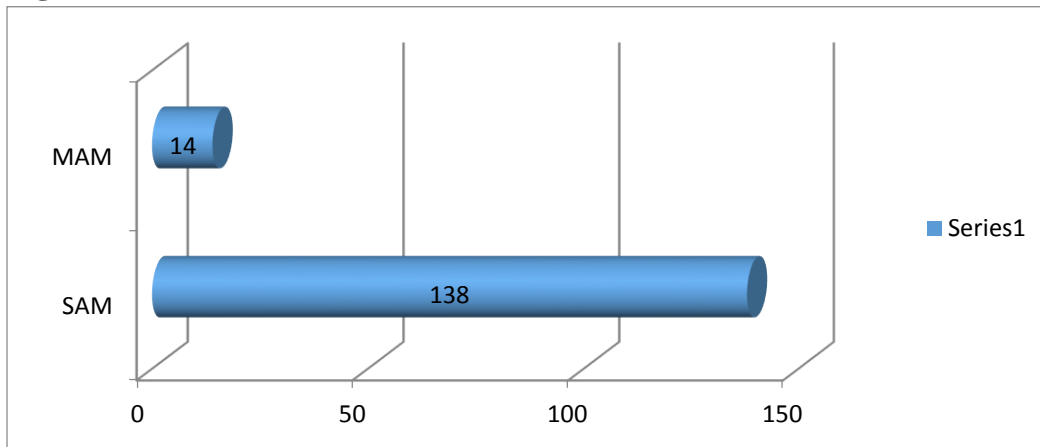
Table 2. Age of the respondents

Age (in months)	Frequency	Percentage
0 – 12	65	42.8%
13 – 24	40	26.3%
25 – 36	28	18.4%
37 – 48	11	7.2%
49 – 59	8	5.3%
Total	152	100.0%

Most of the respondents (42.8%) were between 0 – 12 months, followed by those between 13 – 24 months (26.3%) and the least were 49 – 59 months (5.3%)

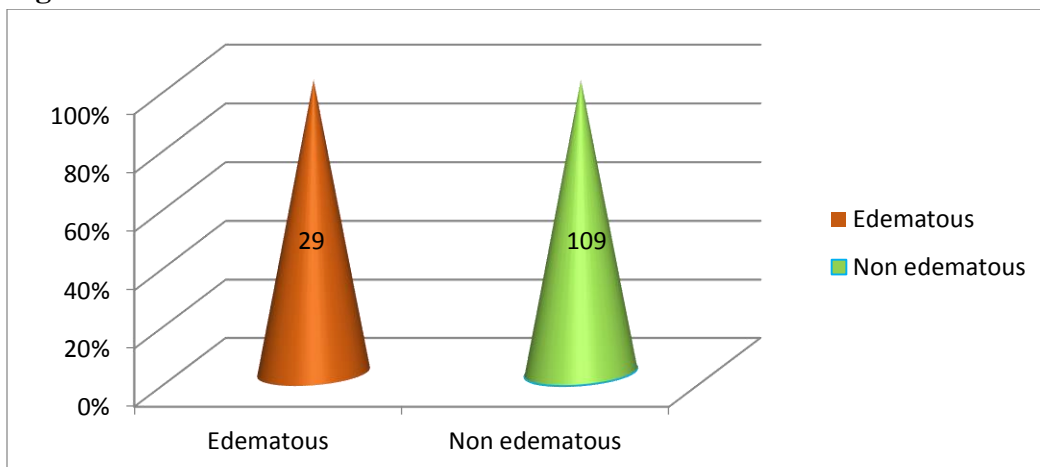
4.2 TYPES OF ACUTE MALNUTRITION

Figure 2: Prevalence of SAM and MAM



14 respondents (9.2%) had MAM while 138 respondents (90.8%) had SAM

Figure 3: Forms of SAM



29 respondents (21%) had edematous SAM whereas 109 respondents (79%) had non edematous SAM.

PREVALANCE AND EXPOSURE TO HIV IN PATIENTS WITH ACUTE MALNUTRITION

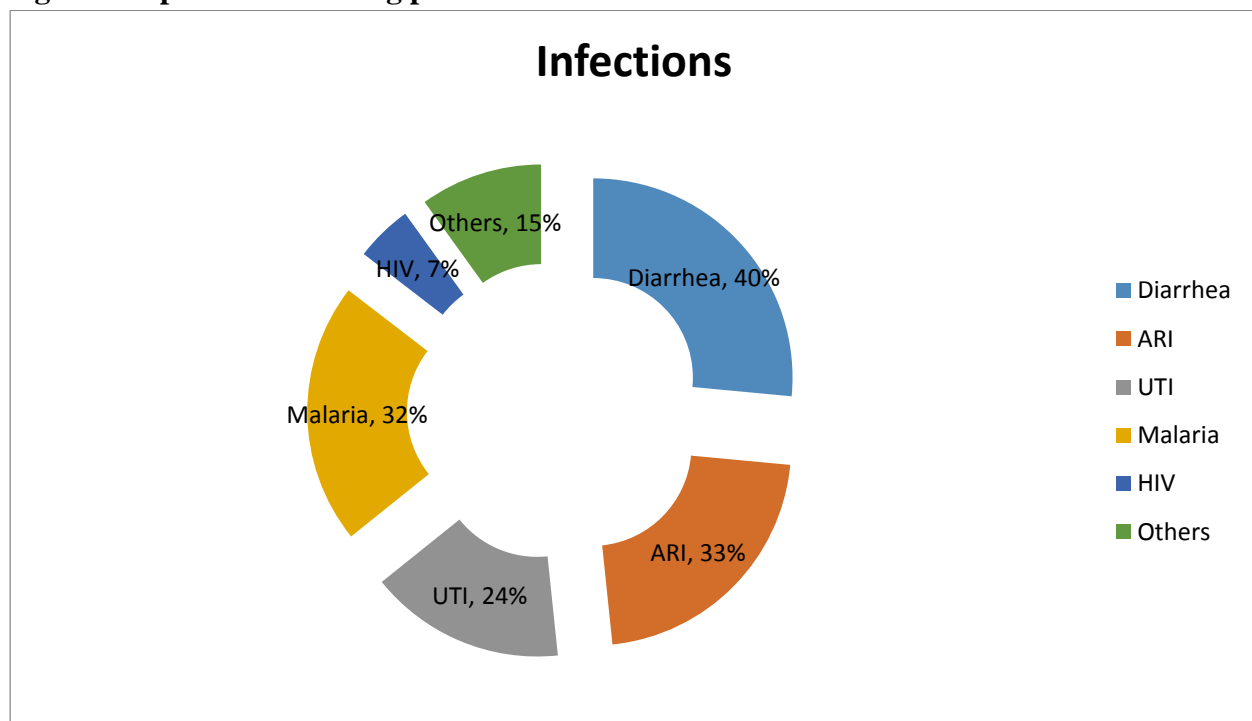
Table 3. Showing HIV prevalence and exposure

Test category	frequency	percentage
Negative	116	76.3%
Positive	11	7.2%
Exposed	10	6.6%
Unknown status	15	9.9%

116 respondents (76.3%) tested negative, 11 respondents (7.2%) positive and 10 were exposed while 15 were of unknown status.

INFECTIONS ASSOCIATED WITH ACUTE MALNUTRITION

Figure4. A pie chart showing prevalence of infections associated with acute malnutrition



Of the respondents, 40% (62) had Diarrhea, 33% (50) ARI, 24% (37) UTI, 32% (48) Malaria, 7% (10) HIV, while 15% (23) had other conditions.

Table4: showing number of co morbidities associated with malnutrition forms

Type of AM	No specific infection	Only one infection	More than one infections	Total
MAM	07	06	01	14
Edematous SAM	02	09	18	29
Non edematous SAM	34	55	20	109

In this table, 27/29(93%) of children with edematous SAM, 75/109(69%) with non-edematous SAM and 7/14(50%) with MAM suffered from at least one infection

Table5: showing duration of hospital stay in relation with acute malnutrition

Period of hospital stay	≤7days	>7days
MAM	14	00
Edematous SAM	04	25
Non edematous SAM	70	39

25/29(86.2%) of children with edematous SAM and 39/109(35.8%) with non-edematous SAM had their hospital stay prolonged for more than 1 week

CHAPTER FIVE

DISCUSSION OF RESULTS

5.0 Introduction:

This chapter provides the discussion of significant findings in results shown in chapter four, however, much emphasis has been put to elaborate more on the section of findings about SAM since as seen above, the available literature is more directed to it and its further much more implicated in the hospital admissions than any other form of malnutrition. The study sample composed of 152 subjects who were children found to have acute malnutrition admitted within our study period.

5.1 Demographics:

Of the 152 children data analyzed, it was found out as shown in figure one that 52.3% were males and 48.7% females which suggests there is almost equal distribution of acute malnutrition among both sexes and there was no significant relationship seen between gender and infection prevalence.

With age however, table2 results clearly show a decrease in prevalence of acute malnutrition with increase in age, prevalence being higher in the first year of life and lowers as someone approaches the fifth year of life. MAM in exception was found to be more prevalent in older children than younger ones assessed in this study. In general, as presented, the prevalence was 42.8%, 26.3%, 18.4%, 7.2%, and 5.2% in the first, second, third, fourth, and fifth year of life respectively. This therefore adds more value on the government's initiative to improve maternal and child health care services ranging from ANC, safe delivery practices, breastfeeding, and child health programs.

5.2 Prevalence of forms of acute malnutrition

According to figure2, out 152 children with AM, 14(9.2%) had MAM and 138(90.8%) had SAM yet opposite of these findings was true in a study done by Atuhaire and Micheal at mulago assessment Centre in 2013 showed prevalence of MAM to be 8% as compared to that of SAM at 7% among 711 children aged 6-59months that were enrolled. These results therefore display a significant impact on child health by SAM specifically as evidently revealed by such an overwhelming prevalence in admitted children than MAM.

And in figure3, out of 138 children with SAM, 29(21%) had edematous form while 109(79%) had non edematous SAM or were wasted and so my research question two fetches a response that SAM is more prevalent than MAM among children with AM while non-edematous form is more prevalent than edematous form of SAM when considering hospital admissions related to acute malnutrition. The proportion of wasted or non-edematous SAM children in this study also reveal a higher prevalence than in the two studies of Kebede, Kassahun, and Destaw in Hidabu Abote district, Ethiopia in 2012 and that study of Nakaseke and Nakasongola districts of Uganda where only 16% of children were wasted.

5.3 Prevalence of infection among children with acute malnutrition

Figure4 results show prevalence of infection as 40%, 33%, 24%, 32%, 7%, and 15% for Diarrhea, ARI, UTI, Malaria, HIV, and other infections respectively. These findings are synonymous with results of a study by Gabriel A, Marko, and Serge in Jan 2013 where the prevalence of Pneumonia, Diarrhea, and UTI were 33.8%, 35.2%, and 24.1% respectively. However, the same study puts prevalence of HIV among SAM children which is quite higher than that of 7.3% in table3 above. 32% prevalence of malaria is also the same as that of 30% from 2016 UDHS study

Table4 summarizes the percentage association of infection with AM whereby 50% of MAM cases were associated with at least one infection and 74% of all cases of SAM had at least one form of infection. In addition, 93% of cases with edematous SAM and 69% of all cases of non-edematous SAM had at least one form of infection. This reveals likelihood of a higher morbidity and mortality rates associated with edematous SAM (93%), followed by non-edematous SAM (69%) and least with MAM (50%). The results are in line with those in the study by Gabriel A Jan 2013 above which compared prevalence of infection between SAM and non-SAM children, where Bacteremia levels ranged from 3% to 30%, mortality varied largely from 18% to 47.4% among SAM and 12% to 37.7% among non-SAM, showing a higher mortality and morbidity rate among SAM children.

5.4 Relationship between forms of acute malnutrition and duration of hospital admission

Table5 showed the proportion of each form of malnutrition related to the two broad sections of duration of hospital stay as period less or more than a week. It was found that all children with MAM related complications were discharged within 7days of admission while up to 35.8% and 86.2% of children with non-edematous SAM and edematous SAM related complications respectively were admitted for a duration more than 7days. These statistics depict a higher

morbidity and mortality rates, increased likelihood to nosocomial infections and exaggerated hospital expenses associated mostly with edematous SAM, followed by non-edematous SAM and least with MAM among patients with acute malnutrition.

5.5 CONCLUSION

Acute malnutrition is more prevalent and severe in the younger than older children as shown by a higher prevalence of 42.8% in the first year of life that declines with increase in age to 5.3 toward the fifth birthday and more cases of MAM seen in older children than younger with its reduced health implications in co morbidities and reduced hospital stay.

Edematous form of SAM is the most severe form of AM with more chances of co morbidities (93%) and prolonged hospital stay since over 85.2% stay for than a week.

Non edematous SAM is the most prevalent form of SAM with 79% while edematous form had 21% prevalence among SAM children. SAM is also more common among admitted AM children with an overall prevalence of 90.8% than MAM at 9.2%

Among children with acute malnutrition, diarrheal infections are the most prevalent followed by ARI, Malaria, UTI, HIV, and other infections.

5.6 RECOMMENDATION

Reduction of prevalence and complications of acute malnutrition employs a combination of both social and economic factors at all levels of disaster which may include

- Identifying and addressing the multiple causes of acute malnutrition among young children in Uganda by building linkages between key sectors in both the public and private arenas to facilitate adequate nutrition advocacy and programming

- The government should set and implement proven high impact interventions in reducing young child and maternal malnutrition, especially those centered in areas of nutritious food production, nutrition care within households, public health, and livelihood support

- Equip nutritional centers as well as local health units with trained staff for early diagnosis and treatment of acute malnutrition and its related complications or co morbidities

-Local institutions should also be equipped to provide leadership and capacity in nutrition policy and programming

And then, whenever possible, nutrition programmes should be appropriately planned, managed, and implemented at community and local government levels in a cross section manner.

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APPENDIX 2: DATA COLLECTION QUESTIONNAIRE

Title: The prevalence of infections among children with acute malnutrition

Inpatient number.....

Age (in months): a) 0-12 b) 13-24 c) 25-36 d) 37-48 e) 49-59

Gender: male ☐ female ☐

Form AM: SAM ☐ M ☐

Forms of SAM: Edemato ☐ Non edem ☐

Associated infection(s): a) Diarrhea b) ARI c) UTI d) Malaria e) HIV

f) Others (specify).....

HIV status: Neg ☐ pos ☐ Exposed ☐ Unknown ☐

Duration in hospital: a) ≤ 7 days b) more than 7 days

No. of infections: a) no infection b) only one type of infection c) two or more infections.

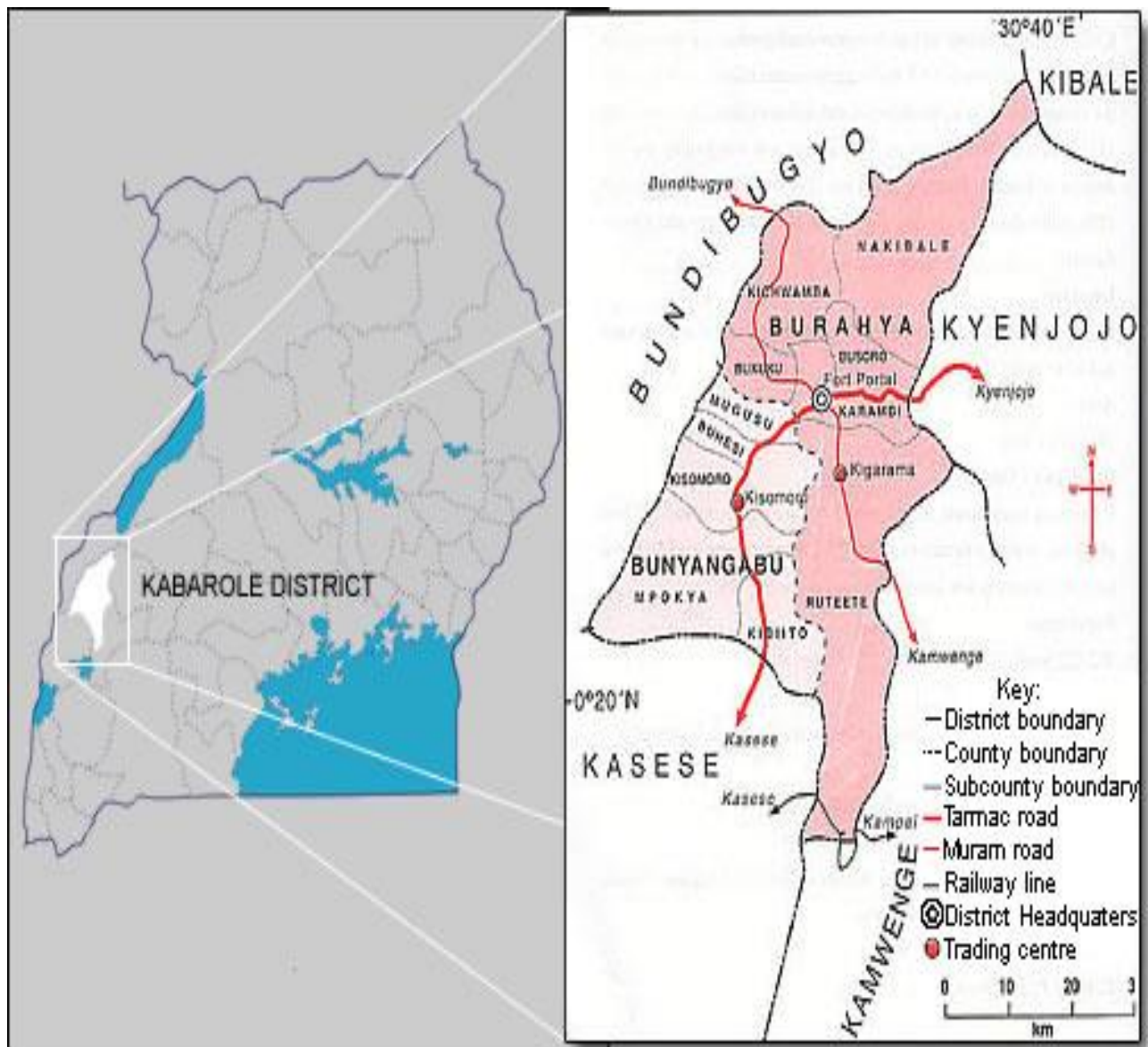
APPENDIX 3: WORKPLAN

DATE/ DURATION	ACTIVITY
OCTOBER 2017 TOJANUARY 2018	RESEARCH PROPOSAL WRITING
JANUARY TOFEBRUARY 2018	DATA COLLECTION
FEBRUARY 2018	DATA ENTRY, ANALYSIS AND PRESENTATION, DISCUSSION

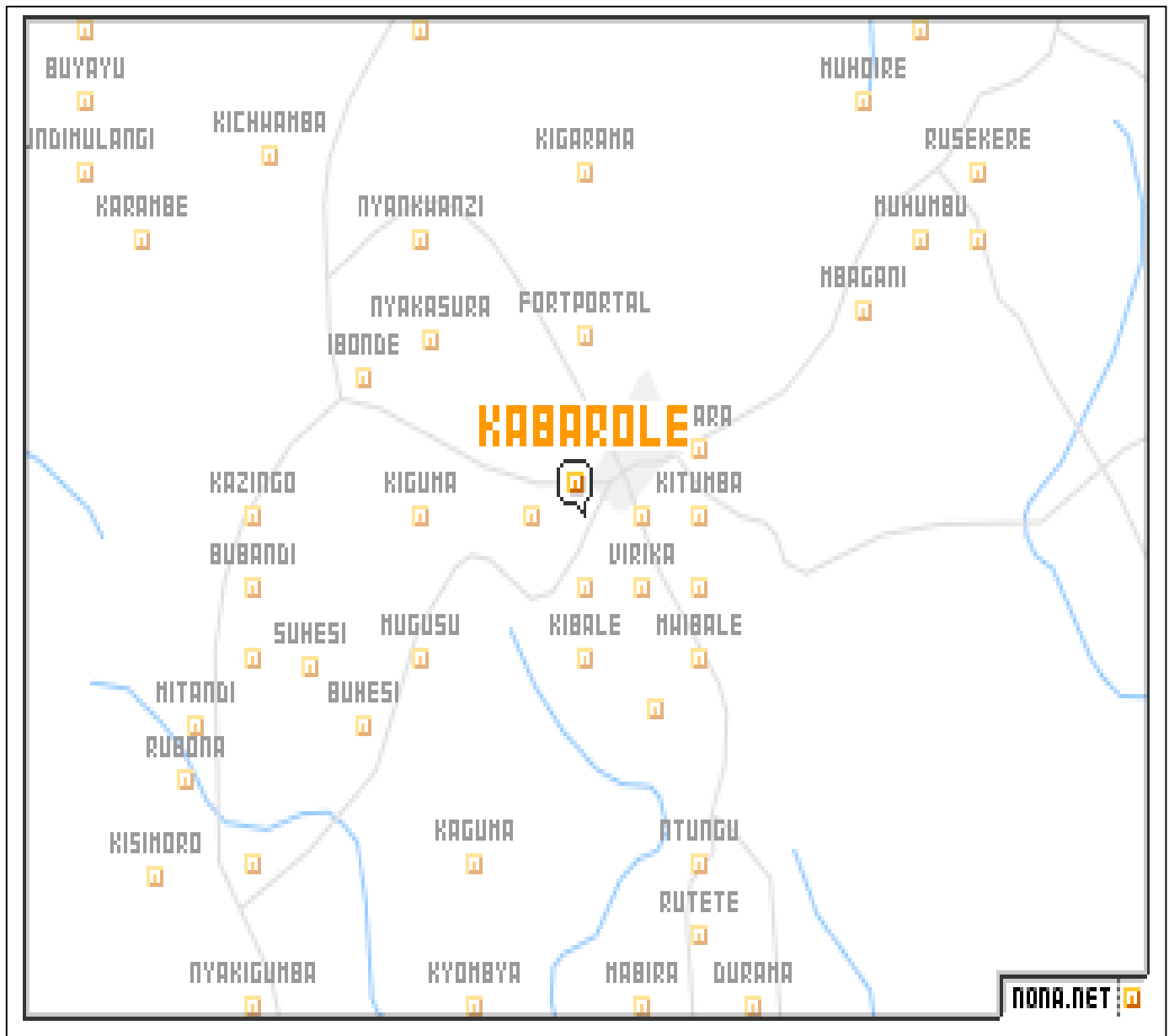
APPENDIX 4: BUDGET

ITEM	COST
STATIONARY AND PRINTING	150,000/=
INTERNET AND COMMUNICATION	150,000/=
TRANSPORT	100,000/=
OTHERS	50,000/=
MISCELLENEOUS	80,000
TOTAL	530,000/=

APPENDIX 5: THE MAP OF UGANDA SHOWING THE POSITION OF KABAROLE DISTRICT



APPENDIX 6: THE MAP OF KABAROLE SHOWING THE POSITION OF FPRRH



KEY

