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RWANDA

**FACTORS ASSOCIATED WITH SEVERE ACUTE MALNUTRITION
AMONG UNDER FIVE YEARS CHILDREN AT A SELECTED
DISTRICT HOSPITAL, RWANDA**

LEONCIE NISHIMWE

COLLEGE OF MEDICINE AND HEALTH SCIENCE

SCHOOL OF NURSING AND MIDWIFERY

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UNIVERSITY *of*
RWANDA

**Factors associated with Severe Acute Malnutrition among under
five years children at Kibagabaga District Hospital, Rwanda**

By

Leoncie NISHIMWE/ 218000735

**A dissertation submitted in partial fulfilment of the requirements for the degree of
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Supervisor: GASURIRA Sylvestre

Co-Supervisor: Dr KATENDE Godfrey

September, 2019

DECLARATION

I, Leoncie NISHIMWE do hereby declare that this dissertation titled “ **Factors associated with Severe Acute Malnutrition among under five years children at Kibagabaga District Hospital , Rwanda** ” submitted in partial fulfillment of the requirements for the degree of **Masters of sciences in Pediatrics Nursing** , at the University of Rwanda/ College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating the sources of information quoted or cited.

Date and student Signature 06/09/2019



Leoncie NISHIMWE

DEDICATION

Sincerely, the work is dedicated:

To my lovely husband: **Obed NSHIMYUMUKIZA,**

To my Children that I loved too much: **INEZA Rica Joyce and INEZA Hirwa Loevan**

To my **Mother**

To my **brother and sisters,**

May God bless you all!

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Finally, my gratitude is extended to all relatives, family and friends.

May God bless them always!

ABSTRACT

Background : Globally malnutrition among under five children remain common issue of public health with its related global mortality rate of 45%. This health issue was found to be most dominant in developing countries including Rwanda.

In Rwanda, RDHS of 2014-2015 reported that 36.7% of under five years children were stunted, while 14% had severe malnutrition ; yet little is known about the risk factors associated with severe acute malnutrition itself.

Aim of the study:The current study aimed at identifying the factors contributing to SAM among under five years children.

Methods: the quantitative research approach with a descriptive cross-sectional study design, using convenience sampling method was utilized to obtain a sample size of 92 participants. To collect data from participants, an adopted self administered questionnaire was utilized after getting permission from its author. The data collection took three months. Data were entered and analyzed using SPSS(version 23). Inferential statistics was performed, fisher test was calculated , A p-value of 0.05 was considered as significant.

Result of study:The proportion of severe acute malnutrition was high at 55 (59.8%),the factors associated to severe acute malnutrition were the lack of education level, parents with lower monthly income were likely to suffer from SAM (OR:1.348, : ≥ 100.00), The unemployment was associated with severe acute malnutrition (OR: 1 compared to the employed parents OR: 0.544).

CONCLUSION:This study is limited on social-Demographic, Economic and Health related Factors associated with severe acute malnutrition among under five years were research findings confirm that proportion (59.8%) of SAM, a half of under five hospitalized for malnutrition at Kibagabaga, Moreover the children whose parents live style that is alcohol users were more associated with severe acute (OR=1.541,P=0.031,95%CI=1.342-1.977, children having chronic diseases was statistically significant associated to SAM

Keywords: Malnutrition, Severe acute malnutrition, factors associated with SAM, under five Children

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LIST OF ACRONYMS AND ABBREVIATIONS

DHS:	Demographic Health Survey
SAM:	Severe Acute Malnutrition
MAM:	Moderate Acute Malnutrition
BMI:	Body Mass Index
OR:	Odds Ratio
AOR:	Adjusted Odds Ratio
CMAM:	Community based Management of Malnutrition
LBW:	Low Birth Weight
MDGs:	United National Millennium Development Goals
WHO:	World Health Organization
MOH:	Minister of Health
MUAC:	Middle Arm Circumference
RNIS:	Rwanda National Institute of Statistics
SD:	Standard Deviation
SPSS:	SPSS: Statistical Package for Social Sciences
UNICEF:	United National of Children's Found
HIV :	Human Immunodepression Virus

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CHAPTER ONE: INTRODUCTION

1.1. Introduction.

The chapter of introduction describes the background, problem statement, significance of the study, research objectives including general and specific objectives and research questions that can orient the researcher to obtain adequate results, and organization of the study. This chapter is intended to come up with the real picture of study based on socio-demographic, Economic and Health related factors associated with severe acute malnutrition were this study limit.

1.2. Background to the study

Malnutrition is a state of nutrition deficiency or excess of energy, protein, and other nutrients and cause measurable adverse effects to all parts of the human body (Asres, Prasad and Ayele, 2018.P 2.).

Globally children malnourished remain common issue of public health and it was most dominant in developing countries (Endris, Asefa and Dube, 2017). As reported by the WHO (2018) showed that 52 billion of under five children were wasted, 17 million of under five years children were severely wasted, while 159 million were stunted, 50 million do not weigh enough for their height (wasted) and 41 million of children less than five years old were overweight in worldwide (GLOBAL NUTRITION REPORT 2016, p2).

The global mortality rate caused by malnutrition in children age of five years old were around 45% and directly linked with malnutrition.(WHO, 2015)

In developed countries, the malnutrition among children under five years old was present where the prevalence of overweight estimated to be 15% in 2012. In America, the global mortality rate of malnutrition was around of 3.1 million among under five years children and the consequences increased in under five years children with low immunity and it was linked with infection diseases like HIV, hepatitis C and Tuberculosis (Global nutrition delivery report 2016).

In France, the global malnutrition was around 52 million among under five years children and these children were stunted, 17 million are severely wasted, 159 million are too short for their age (stunted) while 59 million were wasted and 41 million are obese (HWO, Global N, 2018)

In developing countries, the global prevalence of chronic malnutrition was about 39.9% (Endris, et al., 2017). The Africa, the prevalence rate of underweight was 26.6% in South-East Asia (Endris, et al., 2017). Stunting affected 22.2% or 150.8 million children under 5 globally in 2017. In the same year, wasting continued to threaten the lives of estimated 7.5% or 50.5 million children under 5 globally (UNICEF, WHO, 2018).

According to WHO (2013) 45% of all death of children less than 5 years old were linked with malnutrition (Thompson et al., 2017). SAM was not most frequently important in developed countries, but it was mostly observed in developing Countries. The WHO reported that malnutrition is associated with about half of 10.7 million of children among under five years old (Tebeje et al., 2017) where Severe Acute Malnutrition is leading causes of illness and mortality in children under age of five years in low and middle income countries like Nepal (Pravana et al., 2017).

Children with SAM were 9 times more likely to die than others without malnutrition. The study done in Nepal showed that the significant factors associated with SAM were like Social critical economic status (17.13%), and Mother's with education level is accounted to be 12.03% and birth interval <24 months were attributed to be 4.09% (Pravana et al., 2017).

In African region, the study conducted in south Ethiopia (2017) found that 27.6% children were under-weight and 9% were stunted and contributed to childhood morbidity, mortality, interfered the intellectual and physical development (physical retardation), and increased risk of diseases like infections, diarrhea (Abera, et al., 2017).

The report of Comprehensive Food Security and Vulnerability Analysis (CFSVA) in Rwanda stated that levels of stunting among children under five years old dropped from 43% to 36.7% respectively in 2012-2015. Stunting among under five years children means that the children is short for their age and it is an indicator of chronic malnutrition and permanently affects brain development and health in general (CFSVA, 2016).

According RDH survey (2014-2015) reported that malnutrition was around 36.7% of children under five years and 14% had severe stunted. Stunting in children less than 6 months is attributed to 11%, and children under five with stunting were being high in west (45%) of Rwanda. The data of SAM in Rwanda was not available but the consequences related to

those condition occur(Jacques, 2015).The Rwanda has established the strategy of reducing poverty and hunger but still malnutrition was found among the poorest household (46%) compared to richest family 2% (RDHS_KIR, '2014-15).

Therefore, malnutrition will be decreased due to strategies put in place by government of Rwanda to solve this serious health issue but it is still persistent especially in households grouped as one and two category (Ubudehe). This group of Rwandan the living style of poorer and poorest was critical because their incomes were totally low. The demographic data of Gasabo District showed that people who categorized as poor were attributed to be 12.8% while extreme poverty was 13.2 %(EICV3, 2015).

1.3.Problem statement

Globally, malnutrition among under five children remains a common issue of public health concern (UNICEF&WHO, 2018). This health issue was found to be most dominant in developing countries including Rwanda. The World Health Organization, counted 52 billion of under five children wasted, 17 million of them severely wasted, 155 million stunted (UNICEF&WHO, 2018).

In addition to this, under nutrition especially severe acute malnutrition (SAM) among under-five years children it is identified as the major common cause of death, with an estimate of 45% of all deaths among children aged between 0–59 months (UNICEF&WHO, 2018).

In Sub-Saharan countries, where Rwanda is located malnutrition continues to be a major public health issue in developing countries. SAM itself was found to be associated with poverty, poor diet and inadequate access to health care and with 50 % of childhood deaths due to underlying complication, SAM is among the causes reduced the human immunity and induced children mental retardation, reduced economic growth, at family, community, and national level(Juma et al., 2016). According to the report of RDHS(2014-2015)the prevalence of stunting with SAM included has decreased from 44.3 %, in 2010 to 38% in 2015.

Despite the improvement made to decrease malnutrition among under five children, malnutrition is still high in Rwanda. There is a limited data on factor associated with Severe Acute Malnutrition and recognize exactly the proportion, prevalence of SAM among

malnutrition. The reason of the current study for detailed social Demographic, Economic and Health factors associated with SAM, description of the mater and ultimate measures.

1.4. Aim of the Study

The purpose of this study is to identify factors associated with severe acute malnutrition among under five years children at Kibagabaga District Hospital.

1.5. Research bjectives

- (1) To determine the isolated proportion/numbers of severe acute malnutrition among under five years children at Kibagabaga District Hospital (Gasabo District).
- (2) To Assess the factors associated with Severe Acute Malnutrition among children under five years old at Kibagabaga District Hospital (Gasabo District).
- (3) To determine socio-demographic-economic and Health related factors associated with severe acute malnutrition among under five years children at Kibagabaga District Hospital (Gasabo District).

1.6. Research Questions

- (1) is there any isolated proportion of severe acute malnutrition among under five years children old at Kibagabaga District Hospital?
- (2) What are the factors associated with severe acute malnutrition among children under five years old at Kibagabaga District Hospital?
- (3) What are the socio-demographic ,Economic, and Health related factors associated with severe acute malnutrition among under five years children at Kibagabaga District Hospital?

1.7. Significant of Study

The study findings provided information on the Socio –demographic, economic and Health related factors associated with severe acute malnutrition in children aged between 0-59 months. Will be useful in different aspect like community level, Health care setting level, improve prevention af severe acute malnutrition in different clinical settings nursing and will help nursing domain.

Firstly, the data from this study will be useful by health planners such as those at Ministry of Health and non-governmental organization (NGOs) working to set adequate and suitable

strategic to eliminate malnutrition, associated factors and will also make better programs to address the identified problems.

Secondly, the study findings will help the Kibagabaga Hospital's managers and decision maker for health workers , Nutrition Services to plan for their health facilities and consider highlighted Gaps need to improve according research findings. Deal, work on them to find possible other ways to prevent SAM (Severe Acute Malnutrition) in children and plan in daily activities to reduce malnutrition.

Finally, the findings from this study will be used as important literature for future researchers who want to conduct their researches in the same field.

1.8. Definition of Key Terms

Malnutrition is a term that is used to describe a deficiency, imbalance or excess of nutrition's, resulting in measurable adverse effects on body composition, function and clinical outcome (Rahman, Ali and Ahmed, 2017). In our context, malnutrition refers to all children under five years old hospitalized and diagnosed malnutrition at kibagabaga district hospital.

Severe Acute Malnutrition: Severe acute malnutrition (SAM) is a complex word that referred to weight-for-height measurement of $<70\%$ of the median or Z score < -3 WHZ below the mean WHO Reference values or by Mid-upper arm circumference (MUAC) < 11.5 cm, and /or bipedal pitting edema of nutritional origin or visible severe wasting Collins et al., (2016) stated that the sudden loss of weight of a child can be further classified as moderate acute malnutrition or severe acute malnutrition with bilateral edema of nutritional origin. In our context of the study, all children under five years old will be weighed and measured circumference of upper arm in relation with WHO chart growth.

Children under five years old: Are referred to children with age ranged from 0-59 months.

1.9. Subdivision/ Organisation of study

The study is subdivided into six chapters: Chapter1: Introduction, Chapter2: Literature review, Chapter3: Methodology, Chapter 4: Presentation of results, Chapter 5: Discussion of findings, Chapter6: Conclusion and recommendations.

1.10. Conclusion to Chapter One

The first chapter provides the review of the general information on the research topic that describes the background, the problem statement, the objectives and rationale of the study.

The second chapter deals with the literature review which describing global situation of severe acute malnutrition (SAM) in worldwide, describing the potential factors associated SAM to under five years children ,to recommend the prevention the factors associated with SAM in children under five years old.

The third chapter described the methodology of the study that was be used in this curent research.

The fourth chapter were focuses on the presentation of results from the data analysis; the data are presented in tables. Clear explanations to understand well the meaning of factors associated with severe acute malnutriyion, the findings are mentioned in discussion, illustrated the factors contributing to the sevre acute malnutrion and found good way to prevent severe acute malnutrition according associated factors finding out. Apart the discussion of findings obtained from data analysis , the last is the summary of study/conclusion and recommendation to different level.

CHAPTER TWO :LITERATURE REVIEW

2.1. Introduction

This chapter of covered by the theoretical literature, empirical literature, the conceptual framework and conclusion. This literature review will be done to explore in deep the Prevelence and Factors associated with Severe Acute Malnutrition among children less than five year,from available national and international studies, reports and other published materials. The purpose of literature review intended to identify the prevelance and factors associated with SAM among children under five years at Kibagabaga Hospital from different gaps that have been seen from different information gathered from text books, repots, journals. then in our context help to plan according evidence based.

2.2. Theoretical literature review on factors associated with SAM

2.2.1.Definition of technical terms pertinent and theory relevant to the study

According to WHO define **severe acute malnutrition** as a very low weight for height by visible wasting or by presence of nutritional edema.

Malnutrition is a term used to describe a deficiency, imbalance or excess of nutrition's, resulting in measurable adverse effects on body composition, function and clinical outcome (Rahman, Ali and Ahmed, 2017). In addition, the UNICEF said that people are malnourished if their diet does not provide adequate calories and protein for growth and development, maintenance or they are unable to fully utilize the food they eat due to illness (under nutrition). Also, people are malnourished if they consume too match calories and it refers also to people who are undernourished or over nourished(Rahman, Ali and Ahmed, 2017).

The theory about severe acute malnutrition, many theorists developed different theories of malnutrition according “Golden theory of PEM”, malnutrition emphasizes to two principal theories regarding causes of severe malnutrition type kwashiorkor classical theory of protein deficiencyinduced malnutrition and free radicals damage were severe malnutrition as kwashiorkor is result of Protein deficiency. Mechanism of diuretic hormones ADH resulting water retention or edema induced by increased ferritin level toxic cause organ dysfunctionthen malnutrition(Teaching, 2015).

According to the theorist “Gopalan’s dysadaptation theory” affect normal function of nutrient process, effective catabolism and near normal anabolism in marasmus, failure of anabolism in kwashiorkor (Teaching, 2015).

The nursing theorist (Madeleine Leininger underlines the meaning and importance of culture in explaining an individual’s health and caring behavior what can affect nutrition status, said that about Nursing theory and nutritional status where Socio Cultural Determinants that Affect Nutritional Status in different areas and The effects of malnutrition on human performance, health and survival have been the subject of extensive research and studies show that malnutrition affects physical growth, morbidity, mortality, cognitive development, reproduction, and physical work capacity. <https://julianrvaca.com/malnutrition-nursing-theory-and-nutritional-status-2-1180/>

According WHO mention many forms of malnutrition, determine measurement and diagnosed criteria for severe acute malnutrition (UNICEF, WHO, 2018).

the children under-five years old were affected by malnutrition and this condition had many forms and it was classified as follows: (WHO, 2015, p14)

Wasting is used for low weight for height; it is used commonly and widely for the current severe weight loss because of delicate hunger or illness and it refers to a child who is too thin for his or her height (Bain et al., 2013). Wasting occurred where there is a rapid weight loss or the failure to gain weight. A child who is moderately or severely wasted has an increased risk of death, but treatment is possible (Jamro et al., 2012)

Overweight refers to a child who is too heavy for his or her height, this form of malnutrition results from energy intakes from food and beverages that exceed children’s energy requirements. Overweight increases the risk of diet-related non-communicable diseases later in life (Tadesse et al., 2017). Stunting (height-for-age) is a linear growth measurement of a child; length and stature are used for the height-for-age based on the way of measurement. If there is shortfall on height-for-age, it designates continuing growing insufficiency of health or nutrition (Tadesse et al., 2017). It refers also to a child who is too short for his or her age so children can suffer severe irreversible physical and cognitive damage that accompanies stunted growth. The devastating effects of stunting can last a lifetime and even affect the next generation (Thompson et al., 2017).

World Health Organization (WHO) recommends same measures for equity in health, The term malnutrition generally refers to both under nutrition and over nutrition (UNICEF, WHO, 2018). Stunting, wasting, and underweight are among those Anthropometric indicators are commonly used to measure malnutrition in a population of under five years old children. Underweight (low weight-for-age) reflects both low height-for-age and low weight-for-age and therefore reflects both cumulative and acute exposures of malnutrition (Juma et al., 2016). According to WHO child Growth standards, Under-five malnutrition is measured by the following

Severe Wasting refer to Percentage of children aged between 0–59 months that are below minus three standard deviations from median weight-for-height of the WHO Child Growth Standards (Jamro et al., 2012). While WHO define wasting (moderate & severe) as Percentage of children aged 0–59 months that are below minus two standard deviations from median weight-for-height of the WHO Child Growth Standards (Tadesse et al., 2017).

Overweight (Moderate and severe) Percentage of children aged 0–59 months who are above two standard deviations from median weight-for-height of the WHO Child Growth Standards (Bank, UNICEF, WHO, 2017).

Stunting (Moderate and severe) Percentage of children aged 0–59 months who are below minus two standard deviations from median height-for-age of the WHO Child Growth Standard. And underweight as Percentage of children aged 0–59 months who are below minus two standard deviations from median weight-for-age of the World Health Organization Child Growth Standards (Macete et al., 2013).

2.2.3 Characteristic and diagnosed criteria of SAM , contributing causes, factors and consequences of SAM according WHO

Severe acute malnutrition is usually characterized by severe body wasting (marasmus) and /or bilateral nutritional oedema (kwashiorkor) where marasmus or severe wasting is mean weight for height less than -3SD or Z scores or less than 70% of the median and edematous malnutrition or kwashiorkor manifested by symmetrical edema involving at least the feet (Fernandes, de Castro and Sartorelli, 2017).

The severe acute malnutrition was diagnosed when the child manifested the following criteria WFH Z scores less than -3SD, MUAC less than 11.5mm and malnutrition with bipedal edema or visible severe wasting (Tadesse et al., 2017)

The inability to access enough food in quality and quantity, food insecurity may underlying causes of severe acute malnutrition and worsening by predisposing factors like high population in term of child spacing and high prevalence of poverty, individual's vulnerability to health disorders due to inadequate knowledge about the benefits of exclusive breast feeding practice and role of micro-nutrients, the lack of time women have available for appropriate infant care and appropriate their own care during pregnancy and in the first 2 years of life, political ideologies, issues, and infection or chronic disease etiology can be clinical, social and environmental. Root causes of hunger, undernourishment and malnutrition are complex, and diverse ranging from situational or severe poverty, extreme drought, flood, and other weather disparities in food distribution, and absence of food security (Fontell & Vince, 2013).

A study done by Kinyoki (2015) reported the multiple factors that are associated with childhood malnutrition and these are often interrelated, one simply cannot say that these are the cause of childhood malnutrition because it is a complex phenomenon (Kinyoki, et al., 2015). The major factors that contribute to severe acute childhood malnutrition are, poverty, educational level of mother, faulty feeding practices, Vitamin A status, low status of women or low social economic status, birth order or low birth weight, chronic disease, birth interval, marital status, unsafe drinking water, diarrhea, mother's occupation (Belaynew W, 2014).

Severe acute malnutrition in general exhibits many complications within under five population, as a common problem in low income families among children under-five years old and remains one of the major public health problems in many parts of the world (Juma et al., 2016). The 21.37% under five children are under nourished in the world. South East Asia (42.48%) and Sub-Saharan Africa (24.57%) has the highest burden of under nutrition (Talukder, 2017). Malnutrition is identified as the major cause of death, with an estimate of 45% of all deaths among children aged 0–59 months of age (Ayala and Meier, 2017) and responsible is responsible for 2.2 million deaths and 21% disability adjusted life years (DALYs) for under five children annually (Vincenzo S., 2015).

Worldwide, child malnutrition remains common all over the world, it is most dominant in developing countries (Endris, Asefa and Dube, 2017).

For example, the prevalence of chronic malnutrition was about 39.9% in Africa, and the prevalence rate of underweight was 26.6% in South-East Asia (Kavosi et al., 2014).

Stunting affected an estimated 22.2 per cent or 150.8 million child under 5 globally in 2017. In 2017, wasting continued to threaten the lives of estimated 7.5 per cent or 50.5 million children under 5 globally (UNICEF, WHO, 2018).

The Comprehensive Food Security and Vulnerability Analysis (CFSVA) report in Rwanda found that levels of stunting among children aged under 5 dropped to 36.7 % in 2015, down from 43 per cent at the time of the last analysis in 2012. Stunting, where a child is short for their age, is an indicator of chronic malnutrition and permanently affects brain development and health (CFSVA, 2016).

2.3. Empirical literature review of factors associated with SAM among under five years children

Research findings indicated that poor nutrition during childhood is one of the most important conditions that implicated different factors impeding the physical and the mental development of children which can lead to permanent disabilities (Jesmin et al., 2011).

2.3.1 Global prevalence of SAM among under five years children .

Around the Globe, severe malnutrition in child hood is among the four leading cause of mortality .The World Health Organisation (WHO2013) reported the severe malnutrition was linked to 45% of all childhood death, (CGHD , 2015) ,(Kavosi et al., 2014)

Accordingly similar studies conducted on the prevalence and assessment of nutritional status of the children admitted in the hospital of SAM in northern district of India conclude that the prevalence of SAM was lower (2.2%) in this northern district of India as compared to national prevalence (7.9%) and where revealed that 47.6% manifested SAM, and 31.4% suffering from MAM (Bhadoria et al., 2017).

As cited by RDHS 2014-2015, the nutritional status of children under age five is an important measure of children's health and growth. The anthropometric data on height and weight collected in the 2014-2015 showed that 23% of children under five age were stunted (too short

for their age) at Kigali city while 38 % at the national level. Variation in children's nutritional status by district is quite evident, with stunting being highest in Nyarugenge 29 %, followed by Gasabo District 22% and the lowest was Kicukiro with 17 % (RDHS 2014-15) and (National Institute of Statistics of Rwanda, 2016) were 2% of under five years children are wasted (too thin for their height) in the City of Kigali, same level as at national level. The wasting prevalence is almost the same in all District 3 % in Gasabo, 2 % in Kicukiro and Nyarugenge (each). 5% of children under age 5 in the City of Kigali are underweight (low weight for-age) compared to 9 % of children under age 5 at national level. Variation in underweight children by district shows that Nyarugenge has the highest percentage of children who are underweight 7% followed by Gasabo 6% and Kicukiro 2%). (National Institute of Statistics of Rwanda, 2016)

2.3.2.The factors associated with severe acute malnutrition

2.3.2.1 The Social demographic factors relevant to this study

Education level of mother according to Seid, the education of mothers has several positive effects on care of children in comparison to non-educated mothers so about 12. 3% were children malnourished linked with illiterate mothers (Seid, Seyoum and Mesfin, 2017). Several studies reported that the educated mother utilized the health care facilities and they followed the instructions given by health providers about feeding and caring practices (Bain et al., 2013). The mother's illiteracy was significantly associated with the risk to develop malnutrition in children under the age of five (Bain et al., 2013). Hundred millions of children in less developed countries suffer from poor health and nutrition due to low literacy of mothers (Fernandes, de Castro and Sartorelli, 2017).

Children in most less developed countries also complete far fewer years of schooling, and learn less per year of schooling, than do children in developed countries, this leads to low literacy of future mothers with risk of offspring under nutrition (Ayala and Meier, 2017). Recent research showed that poor health and nutrition among children reduced their time in school and their learning during that time (Endris, Asefa and Dube, 2017). This implied that programs or policies that increase children's health status could be improved their education outcomes (Endris, Asefa and Dube, 2017).

Given the importance of education for economic development, parents' level of education is low rate 7.06% also has impacts on their children, this link could be a key mechanism to improve the quality of life in less developed countries and reduce the risk of malnutrition (Tebeje et al., 2017).

Parental/ mother's occupation conferring to a study in Indonesia, non-working mother is 50.6% had better nourished children than that of working mothers is 49.4%, the mothers working in the informal sector were found to have the highest risk factor for child malnutrition (Pravana et al., 2017). The working mothers are able to earn money to fulfil the necessity of their own and of their children but it's opportunity cost will be higher because they will not be able to give their time to look after the children (Pravana et al., 2017).

2.3.2.2 The Social economic factors relevant to this study

The major socio-economic associated factors with Severe Acute Malnutrition identified as Poverty, family low income were the nutritional status of under five children is a sensitive sign of a country's health status as well as economic condition (Bain et al., 2013).

Researchers found a strong significant association between household wealth inequality and chronic childhood under nutrition, the findings of the study showed that children of poorest household had highest risk at late of 62% of being chronically nourished than the children of wealthiest households (Bain et al., 2013)

It has been suggested that the actions that reduce the poverty and to make services more available to the poor households for the improvement in overall childhood health and nutritional status in the world (Tebeje et al., 2017).

Poverty is an established cause of malnutrition; the studies have reported the under nutrition is highly prevalent in the places where 64% the people from low and middle income countries are struggling with severe poverty (Thompson et al., 2017).

Poverty is 24.03%, ignorance 11.7%, disordered feeding 13.4%, nutritional status; repeated pregnancies 29.8%, parent's separation 9.7% and mother's health is 11.37% are established risk factors for severe acute malnutrition (Ijarotimi et al., 2013).

Physical environment, personal hygiene, and consumption of contaminated water and food are also important risk factors (Shafqat et al., 2013)

A number of studies suggest that factors such as lack of knowledge about recommended infant and child feeding, unemployment, and health related factors are predictors of malnutrition among the under five children (Amsalu&Tiyabu, 2016).

According (UNICEF, 1998) the concept frame work for factors contributing to SAM and study done by (Kinyoki et al., 2015) illustrate immediate causes of malnutrition like inadequate diet intake and diseases where insufficient nutrient intake makes a person increase 50% more chance to susceptible to infectious disease than others (Bain et al., 2013).

2.3.2.3 The Health related factors/ health past history relevant to this study

Feeding practices according RDHS 2014-2015 reported that 5.3% of children less than five age respect exclusive breast feeding at least 6 month and mother who known good feeding practice, the risk of childhood malnutrition increases with poor feeding, it mainly prevails among the ethnic groups of same people, the faulty feeding practices like late initiation of breast feeding, starting artificial feeding before 6 months and early or late start of complementary foods causes malnutrition (Macete et al., 2013).

It was found in Egypt that 73,4% of women early initiation of breast-feeding to the infants was associated with lower rate of diarrhoea episodes than those of late initiated breast-feeding, yet, stunting and severe stunting can be reduced if the baby is exclusively breast-fed for 4-6 months this study revealed that 68.2% respect exclusively breastfeeding (Macete et al., 2013).

Vitamin A deficient a study done in Nepal found that 72% of the children less than five years taking Vitamin 'A' supplements twice a year regularly had better health outcomes for malnutrition, diarrhea and acute respiratory infection than those who did not take one capsule or took only one time (Pravana et al., 2017). Consumption of Vitamin 'A' rich food alone was not enough to protect the children from malnutrition, diarrhea disease (Pravana et al., 2017).

About birth interval a study conducted in Malawi has found high prevalence 27.1% of child spacing as an association between birth interval and child malnutrition, a child born 4 years after his preceding sibling was found to be better weight for age than first born child or child born within four years (Asres, et al., 2018)

2.4. Critical review and research gap identification regarding associated factors with SAM.

Many studies have been done on prevalence, risk factors and consequence and complications of malnutrition, however these studies did not report about the prevalence, isolated proportion of severe acute malnutrition and their associated factors. Particularly in Rwanda where malnutrition in general is prevalent at 38% (RDHS, 2015). Therefore the present study is intended to find out the proportion of severe acute malnutrition and the factors contributing to severe acute malnutrition at Kibagabaga district hospital.

2.5. Conceptual framework

2.5.1. Description of the conceptual framework

This conceptual framework in the present study was adopted from Endris, N., Asefa, H. and Dube, L. (2017) in their article about prevalence of Malnutrition and Associated Factors among Children in Rural Ethiopia. Is made of different variables, clustered in social-demographic, social-economic and client health related past history data. These factors intended to contribute to the occurrence of severe acute malnutrition among under five children furthermore the acute severe malnutrition can lead to the consequences and complications. However the consequences and complications of severe acute malnutrition will not studied in this research.

These concepts was defined and their relationships spelt out here under, the socio-demographic, social-economic and client health related past data about parents of under five children can contribute to the occurrence of severe acute malnutrition among these children. When the severe acute malnutrition occurs, it can be associated with various consequences and complications that can affect the short and long-term health status of affected child.

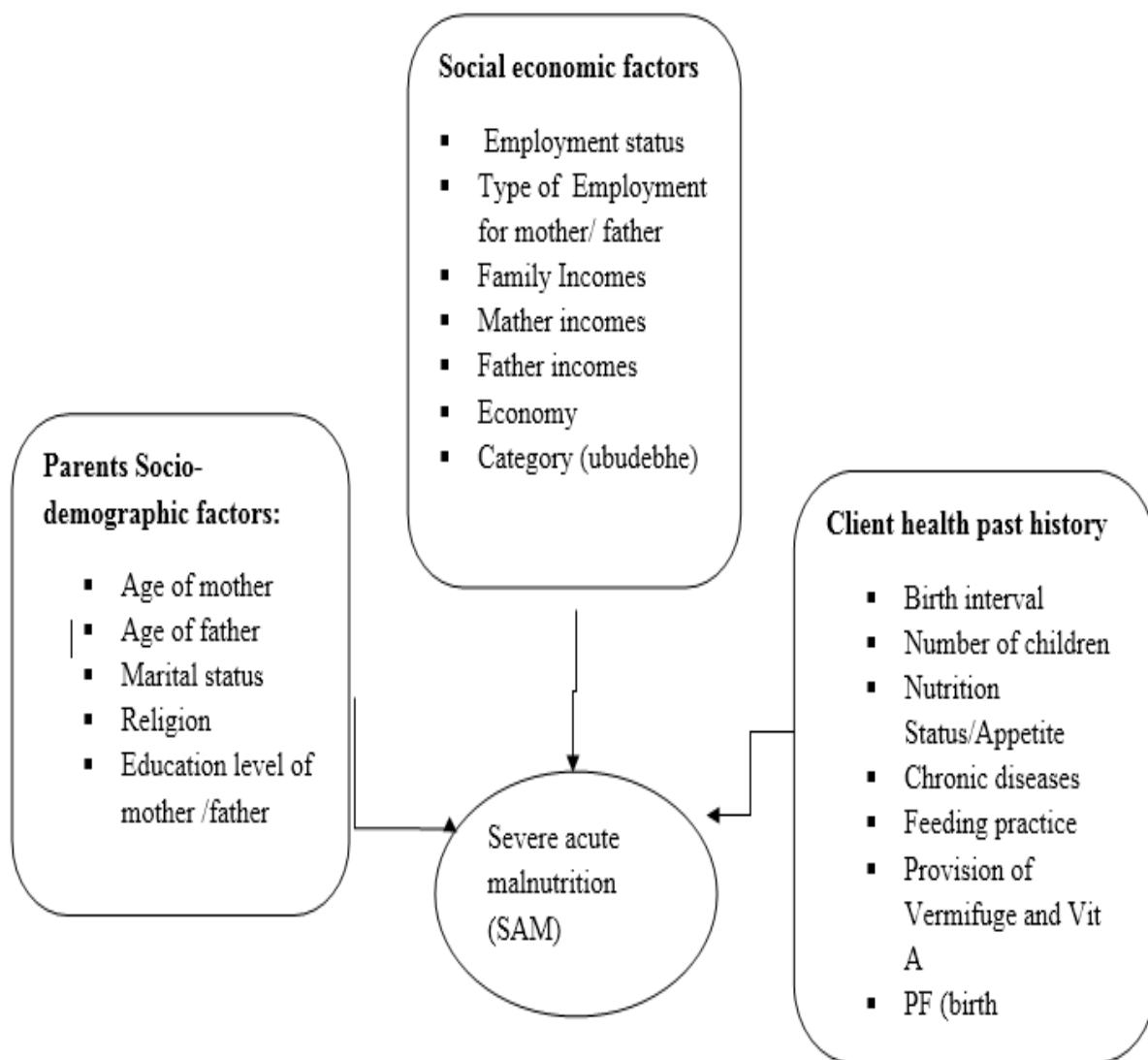


Figure 1: Conceptual framework

Figure2.5.1. Conceptual framework adopted from literature reviews from Endris, N., Asefa, H. and Dube, L. (2017).

2.5.2.Relationship between variables

The parents social-economic variables such as employment and income status are reported to affect the occurrence of severe acute malnutrition, the unemployed parents are likely to have low incomes, this was found to lead to poor diet intake in quality, with high risk of malnutrition, particularly the under five years children, the elevated prevalence of SAM is positively linked with poverty (Thompson et al., 2017).

Social-demographic factors includes age,gender, parental educational level,large family size are linked to severe acute malnutrition SAM, several result of different studies recognized the relation between with severe acute malnutrition in under five children, this has been reported in the study done in Indian by Bhadoria et al., (2017), the under five children from parents with low education level and large family are at high risk of severe acute malnutrition.

About health services, according to(Bhadoria et al., 2017)the under five children of parents withn low health literacy, the ones without access to different familly planing methods, short birth spacing interval, large family are at high risk of severe acute malnutrition(Bhadoria et al., 2017).

2.5.3. Conclusion to literature review

The literature reviewed indicates that Severe Acute Malnutrition among children under five years is determined by several factors, a need to find out if similar factors are responsible for SAM in the areas. Poor nutrition is implicated in more than half of all child deaths world-wide a proportion; this is part of the research gap that this study seeks to examine

The big effort may be made in eradicating poverty, low education level and improving family income , involving political, environmental and social factors which are difficult to prevent and control by isolated vertical approaches in order to maximise result From those factors we can analysis it and found factors significantly associated with SAM among children less exclusively birth an five years then from the result obtained by the researcher may read to recommend to difference concerned authorities same suitable strategies their can use and improvement in order to promote and restore the health the proposed strategies will allow to achieve SDGs regarding “ good health and well-being of under five years children and as per the sustainable development goal 3, target 3.2 talks about to end preventable deaths of children under 5 years of age and to reduce under-5 mortality to at least as low as 25/1000 live births by 2030 in all countries.

CHAPTER THREE : RESEARCH METHODOLOGY

3.1. Introduction

This chapter designates and defines the research methods that were used by researcher to carry out and well completing the study , outlines overall research design, approach, setting, population,sampling methods, and inclusion and exclusion criteria,data collection procedures, instrument to be used during data collection, data management, findings dissemination, ethical consideration and study limitation and conclusion of chapter.

3.2. Research design

Research design is a plan according to which the research must be carried out and focuses on the kind of study is being planned and what kind of results are aimed (Almec, 2015).

In this study, a descriptive cross-sectional design was used as the researcher who collected data at a one point in time and the findings show the factors that associated with severe acute malnutrition SAM among under five years children.

3.3. Research approach

Quantitative research approach was used in this study in order to assess whether prevalence and factors associated with Severe Acute Malnutrition among under five population.This approach involves the generation of data in quantitative form which can be further sub-classified in inferential statistics and helped to identified problems and recommendations were provided according on research findings (Katari,2014).

3.4. Research setting

This research was conducted at Kibagabaga district Hospital, the study site was chosen because Kibagabaga hospital it where severe acute malnutrition has be managed,from their catchment areas that is mainly made of rural sectors, area of Gasabo district so, Kibagabaga hospital is the one hospital in Kigali city that receives many cases of severe acute malnutrition. Therefore, the researcher expects to get the required study population at Kibagabaga district hospital.

3.4.1. Historic of Research Setting (Kibagabaga district hospital)

The study was conducted at Kibagabaga district hospital was build in 2006 by government of Rwanda; it is located in Gasabo district, Kimironko sector, Kibagabaga cell. It one of District Hospital cited in Kigali-Rwanda where cover the same urban and Rural sectors in Gasabo. Has headed by General Director and differents administrative Support The total Population is 477000 populations increasing day to day in all catchment areas of Kibagabaga DH(Health Centers and Health Post) counted 155 total beds for hospitalization, 32 beds are reserved for pediatric patients which the malnourished children were kept, monitored by nutritionist and other health providers.

3.5. Population

The study population comprised of all under five years children hospitalized, for severe acute malnutrition and who followed for the same issue after recovery at Kibagabaga District Hospital (who come for follow-up in nutritional service) during the study period. They were chosen because the Severe Acute Malnutrition is recommended to be managed in district level.

Based on record data of previous annual report, the statistics recorded by hospital data manager on malnutrition especially for severe acute malnutrition shows in previous six months, Kibagabaga district hospital nutrition service admitted average of 120 cases of severe acute malnutrition in this six months ago.

Therefore, the study population constituted under five years children hospitalized and attending nutritional services after recovery (diagnosed SAM) for follow up at Kibagabaga district hospital during the study period.

3.6. Sampling technique

3.6.1. Sample size

The target sample size of the study was made parents of the under five children hospitalized and attending for follow up after recovery to severe acute malnutrition in nutritional services at Kibagabaga district hospital during the study period. So the sample were calculated from the sample population of 120 based on record data previous annual report. The sample size

calculated using the formula of Taro Yamane where by the confidence level is 95% with the precision level (e) of 5% (Glenn, 2013).

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

n = 92 sample size

N= Population

e= margin error

3.6.2. Sampling strategy

Convenience method was applied where the researcher has collected data from participants present at given time of data collection. When the number of 92 participant was selected the selection were closed.

3.6.2.1 .Inclusion criteria

The eligibility criteria to participate in the study, all parents' under five children hospitalized for severe acute malnutrition, and those who recovery to the same issues come for nutritional/ support/for follow-up ,at Kibagabaga district hospital during the study period.

Parents with children discharged in program/nutrition service come for followup The parents must accept and sign a consent form to participate because participation was voluntary.

3.6.2.2.Exclusion criteria

Eligible participants are well- defined , therefore, the next of kin ,any parents of under five children hospitalized for other medical condition at Kibagabaga district hospital. Furthermore, eligible cases above five years old, and eligible participants but did not want to participate in the study was excluded.

3.7. Validity and reliability of research instruments.

The questionnaire was tested for reliability and validity, making it useful for the current study. Content and meaning of most of questions remained unchanged. furthermore, for this research

some questions were removed not fit in Rwandan context; others were modified while other new questions were added to the instrument by the researcher to enhance its validity with current Factors associated with SAM . Inclusive of this new content was seven questions which are the parents living condition, family category/ ubudehe , cow by family/ girinka munyarwanda, chronic diseases, child status at birth, Health education related balanced diet, child growth and development.

This adopted instrument was piloted were pilot study was conducted using this questionnaire one week before conducting final study, in order to make final correction for the tool and to test its reliability. As the tool was successfully used in other studies, it was considered valid. also, the added contents were revised by the researcher and supervisors to seek for the validity of the questionnaire. The reliability of the tool was tested in the paediatric out patient department in Kibagabaga Hospital. The reported Cronbach value was .84 making the tool to also be toughly reliable. attempt to enhance the understanding and accuracy of answers from participants, the tool was translated to Kinyarwanda as a local language because almost of participants understand and use Kinyarwanda.

This questionnaire took approximately 15-20 min to complete.

The permission requesting to utilize the modified version of the questionnaire was addressed to the principal Author “Piniel, A. (2016) ‘Factors contributing to severe acute malnutrition among the under five children in Francistown-Botswana”

The Validity of the adopted tools assisted and validated by specialized supervisor will be used for data collection, will be also ensured through correcting the questions following the pilot study to ensure that it measures what will be intended in the study, during which the data will be collected from 10 participants, the collected data were analyzed, and then the reliability (Cronbach alpha) and validity of adopted questionnaire were reported be its use for the large scale of the study sample. To ensure that results were valid, all information in the questionnaire shall directly related to the aim and specific objectives of the study and the assistant will be coached and trained on administering the questionnaire correctly.

3.8 .Data Collection

3.8.1. Data Collection instruments

To collect data, researcher were used administered end questionnaire to the participants, The adopted the tools that was used by Abigail Piniel in her research had title “Factors contributing to severe acute malnutrition among the under five children in Francistown-Botswana” after getting permission from Author; the used instrument adopted based on the literature review, theoretical framework and study objectives.the adopted questionnaire some questions were removed , others were adjusted while others news were added to enhance its validity of tools. Inclusive of this new content was the questions about family category/ ubudehe, cow by family/girinka munyarwanda,chronic disease that may be factors associated with severe acute malnutrition , child status at birth ,education related balanced diet and child growth and development. Were done by the researcher in order to adjust it to the current study and suitable in Rwandan context, then revised by specialist Co- Supervisor then accept to use as truthfully instrument.(Piniel, 2016,P152-163).

In additional the final data collection tool were made of three sections and contains 41 questions, the section one was concern the socio-demographic data, the second were composed by socioeconomic status of respondents while the third it's the data regarding health data past history.those three main sectors was exhibit expected outcome of Study.

3.8.2. Data collection procedure

After getting an ethical clearance, researcher where compose a letter requesting permission to collect data to Kibagabaga District Hospital. When the authority of Kibagabaga District hospital will give permission, investigator distribute the questionnaires to the participants who were signed consent form to participate in the study, and then the questionnaire were translated in English and Kinyarwanda because many participants were illiterate are Kinyarwanda usage. For illiteracy participants investigator was read each question and participant given a response and mention it to the questionnaire.

The questions were grouped into three sections and the process of data collection took three months and when investigator finish collecting data researcher were started immediately the data entry. This study were conducted through structured questionnaire to getting information from participants. The researcher was collect data from mothers or fathers or any other health

care givers (adopted children) of under five children hospitalized for severe acute malnutrition at Kibagabaga district hospital and those who came for followup.

Before collecting data, researcher were consider to explain to the participants ,that there is not impact related to the information given to the researcher when the participants accept to sign the consent form. The data collection were done from one individual to another. The respondent will be in security area where he or she feels comfortable and secured. There is not motivation related money or other kind of external motivation that can corrupt respondent to participate in the study.

3.9.Data analysis

The collected data were entered into a personal computer using the Statistical Package for Social Sciences (SPSS, Version 23) for calculation, analysed and summarized using descriptive statistics.Data analysis was set in order to generate different tables to represent and analyze data, The descriptive statistics, inferential statistics (frequency, percentages and collection) were applied for this quantitative data collected.analysis was performed to all variables. and confidence interval, p-value was calculated for continuous variables (dependent variables and some of the independent variables), the tables used for preliminary data analysis was generalised, Then was used chi-square tests as convenient test and correlation were establish the associations between variables.and p-value for significant of study.

3.10. Ethical considerations

The researcher was applied for ethical clearance from IRB/CMHS/086/2019 to conduct the Study and obtained permission to conduct research from Kibagabaga district hospital,permission granted data collection within hospital authorized by hospital administration not had ethical committees.Also consent from participants, parents who had children hospitalized for Sevre Acute Malnutrition were obtained,.Patient right was respected, participants were explained that participation in the study was voluntary ,they had the right to withdraw from the study at any stage of the study. Important, significant and purpose of completing study only was clearly explened to the participants. ,to ensure privacy and confidentiality to participants no identification details were required as a measure to ensure

anonymity and all given information was kept anonymous only the codes was used on questionnaires and kept in locked box, the soft copies will be kept in computer locked by a password. Therefore participants guaranteed any negative consequences/ no harm for them from information given. Then the recommendations were set and addressed to different levels of decision -making to facilitate well planning.

3.11. Data management

All data was collected, quantified, entered in SPSS, analyzed, stored on external disk kept confidential, in a personal computer and were maintained on the researcher's address Email so ,that they cannot be lost. Data were kept for study use only and they will not be used contrary to the purpose of the study conducted .They will still be kept nameless and protected. Completed questionnaires were kept in secure locked place so that they could not be accessible to everyone. Data were kept. When for accident the machine is lost or crashes, there will be a possibility to regain collected and stored data. Data were also kept on the external hard drive in order to keep them in different spaces allowing possible recovery of data once lost.The hard copies will be destroyed after five years.

3.12.Data Dissemination.

The distribution of this current Study findings will only be disseminated to the concerned authorities after data analysis and discussion of findings, in case the permission is given.However, the final research findings will be presented to in School of Nursing and Midwifery at College of Medecine and Health Sciences, University of Rwanda.furthermore , the Results , recommendation will be submitted to Kibagabaga Hospital District hospital as study setting. Then after getting authorization It will be ideal to publish findings.

3.13. Limitations and challenges

The big limitation of this study was insufficient limited studies on Severe Acute Malnutrition in under five age in Rwanda , many study was worked on malnutrition in general no literature specific about SAM seen in Rwanda. The researcher to moderate this problem most of literature was sourced from other scholar researchers ,consulted the different articles, studies carried out in African countries ,EAC countries.and Few data regarding SAM that were available in Rwanda and by reports of RDHs2015.

During period of data collection the limitation was the participant come irregularly, some of them demand payment ,while the participation in research is voluntary, no reward needed and study is for academic affair, findings will be use in academic purpose,not financial business.

During all study period , the researcher had to combine his studies and job requirements. To overcome this challenge, the researcher used the two day by week for three months in data collection and was then obliged pay that day free at work place some time worked day- night.

The data collection tool was tested and piloted in pediatric outpatient department before data collection. This can impact on its reliability because these departments differ from those where the tool was used and where the study was conducted.

The researchers expect to encounter problems and limitations including the scarcity of resources relevant to research.

The Challenges the research has been seen, Study conducted in one district so, that it cannot be generalized easily to the whole country. Other limitation is the absence of causal relationship as this study is descriptive.

3.14. Conclusion to chapter three

The chapter three has described the procedure and instruments that has been used by researcher to answer the research questions of the study including the ethical considerations and limitations/Challenges.

CHAPTER FOUR: RESULTS PRESENTATION

4.1. INTRODUCTION

This chapter presents the findings of this study; the results are presented according to the research objectives. The results are presented in tables which are preceded by a short summary of the contents within table.

The main purpose of this study was to assess the factors associated with malnutrition among the under five children at Kibagabaga hospital, Rwanda, with the sample size of 92 parents of under five hospitalised at Kibagabaga hospital for severe acute malnutrition.

4.1.1. Demographic characteristic of respondents

Table 1: distribution of Respondent' social-demographic Characteristics (n=92)

Variables	Frequency	Percent
Age of respondents		
15-24	27	29.3
25-34	49	53.3
35-44	10	10.9
≥ 44	6	6.5
Gender		
Male	14	15.2
Female	78	84.8
Marital status		
Single	27	29.3
Married	51	55.4
Divorced	5	5.4
Widow	9	9.8
Religious		
Christian	84	91.3
Islam	8	8.7
Education Level		

None	20	21.7
Primary	60	65.2
Secondary	8	8.7
University	4	4.3
Relationship		
Mother	62	67.4
Father	10	10.9
Guardian	20	21.7
Employment Status		
Public employed	8	8.7
Private	29	31.5
Unemployed	55	59.8

Table 1: distribution of Respondent' socio-demographic Characteristics (n=92)

The present study reported that the majority of respondents ranged from 25-34 age group 49 (53.3%), while the female were 78 (84.8%) of the total participants.

The majority 51 (55.4%) of the participants were married and christians84 (91.3%). More than half 60 (65.2%) of all parents had primary level of education. 62 (67.4%) were mothers of the children in this study. In regard to the employment, the majority 55 (59.8%)of respondents were unemployed.

4.1.2. Socioeconomic characteristics of participants

Table 2: Soci-economic characteristics (n=92)

Variables	Frequency(n)	Percentage (%)
Family Income		
≤50000	41	44.6
50000 -100000	27	29.3
≥100000	14	15.2
Don't know	10	10.9
Family size		
≤3 persons	27	29.3

4 -6 persons	39	42.4
≥6 persons	26	28.3
Children under 5years in household		
1 child	17	18.5
2 children	42	45.7
3 children	24	26.1
≥4 children	9	9.8
Family Categories		
Category 1	39	42.4
Categories 2	30	32.6
Categories 3	12	13.0
Don't know	11	12.0
Categories 1 with caw by family		
Yes	16	17.4
No	23	25.0
Other categories	53	57.6
Child Family Medical insurance		
Yes	64	69.6
No	28	30.4
Type of Medical Insulence		
RSSB	4	4.3
Mituelle de santé	51	55.4
Others	37	40.2

Table 2: Soci-economic characteristics (n=92)

41 (44.6%) of the respondent had less than 50000 Rwf as their monthly income, the majority 39 (42.4%) of respondents had large family size of 4-6 persons. A large proportion 42 (45.7%) had 2 children of under 5 years in a household. 39 (42.4 %) reported to be in category one, while only 16 (17.4%) of them had a cow in the family.

Table 3:Child's Characteristics

Variables	Frequency(n)	Percentage(%)
Child at birth status		
Term	44	47.8
Preterm	36	39.1
post term	12	13.0
Weight at birth		
ELBW< 1kg	8	8.7
1000 - 1500 gr	15	16.3
Low birth weight (1500 - 2500grams)	27	29.3
above 2500grams	42	45.7
Age of child in months		
0 - 6 months	9	9.8
7-12 months	14	15.2
13-24 months	32	34.8
25-59 months	37	40.2
Child's Sex		
M	40	43.5
F	52	56.5
Diagnosis		
SAM	55	59.8
MAM with medical condition associated	37	40.2

Table 3: Child's Characteristics

The research findings shows that 44 (47.8%) of children were born at term. Most of them 42 (45.7%) were children born of normal weight (>2500gms) . The large proportion (40.2%) of children were aged between 25-59 months. 52 (56.5%) were female children who had SAM. More than half 55 (59.8%) was diagnosed by SAM .

Table 4: Respondent' Health Characteristics(n=92)

Variables	Frequency(n)	Percentage (%)
Age at last birthday		
Less than 21 years(Younger age)	29	31.5
above 21years(Old age)	40	43.5
Unknown	23	25
Family planning		
yes	44	47.8
no	48	52.2
Birth interval		
Below 1year	27	29.3
1-2 years	30	32.6
2-5 years	21	22.8
Above 5years	14	15.2
Pregnant Status		
yes	21	22.8
no	61	66.3
N/A	10	10.9
family Medical Insurance		
yes	78	84.8
no	14	15.2
Parents' Life style		
Alcohol user	65	70.7
smoker	18	19.6

Table 4: Respondent' Health Characteristics(n=92)

The table shows the large proportion 40(43.5%) of respondents, their age of last birth was above 21 years(Old age).32.6% of the respondents reported a birth interval of 1-2 years. 66.3%of the respondents reported that they were not pregnant at the time of the study. While 78(84.8%) reported to have medical insurance. 70.7% reported to use alcohol.

Table 5:Child’ Health, nutrition characteristic N=92

Variables	Frecancy(n)	Percentage(%)
Child’s chronic disease		
Yes	34	37
No	58	63
Type of Disease		
HIV	8	8.7
CHD	4	4.3
HIE	14	15.2
CANCER	2	2.2
Others	6	6.5
No chronic disease	58	63
Children on Medication		
yes	32	34.8
no	60	65.2
Types of medication		
ARVs	8	8.7
Drug for CHD	2	2.2
Drugs for HIE (Depakine...)	14	15.2
Anti- mitotic drugs	2	2.2
Others..	6	6.5
Missing	60	65.2
Duration of treatment		
Short term	14	15.2
Long term	10	10.9
unknown	10	10.9
Vitamine A Supplementation		
Received	74	80.4
Not received	5	5.4
Not sure	13	14.1
Immunasation status		
Up to date	52	56.5
Not up to date	6	6.5
Completion	34	37
WormingTreatment		
Received	56	60.9
Not received	25	27.2
Dont know	11	12
Child’s Appetite		

Satisfactory	25	27.2
Unsatisfactory	67	72.8
Duration of Breastfeeding		
Still currently breastfeeding	31	33.7
0 to 3 months	7	7.6
3 to 6 months	27	29.3
Above one year	17	18.5
Never breastfeed	10	10.9
Artificial feeding		
Breastfeed only/Exclusive breastfeeding	17	18.5
Mixed	41	44.6
Exclusive for sometime then mixed	30	32.6
Not sure	4	4.3
Type of Artificial food		
Cow milk	74	80.4
infant formula	10	10.9
Other liquid food	8	8.7
When started Mixed feeding		
0-3 months	29	31.5
4-6 months	49	53.3
Not sure	14	15.2
Weaning age		
0-6 months	10	10.9
Less than 12 months	16	17.4
13-18 months	22	23.9
19-24 months	27	29.3
Above 2 years	17	18.5
Start Complementary Feeding		
Just at 6 months	64	69.6
above 6 months	28	30.4
Health Education on Balanced Diet, Growth, Developpement		
yes	66	71.7
no	26	28.3

Table 5: Client' Health, nutrition characteristic N=92

The result show that 34(37.0%) respondents has the children with chronic disease associated with SAM, While 58(63.0) respondent their children has no chronic disease.63% reported no

chronic diseases in their children. 65.2% reported that their children were not on medication. most of them 14(15.2%) were under HIE medications. The majority half 74(80.4%) had received vitamin A supplementation with an up to date immunisation 52 (56.5%).

56(60.9%) of the participating children had received worming treatment, 67 (72.8%) of the mothers reported that their children did not have satisfactory appetite, 31(33.7%) of the children were still breastfeeding at the time of the study, 30 (32.6%) of the mothers reported that they were feeding exclusively with mix. Cow's milk was the most preferred artificial food (74(80.4%)), 49(53.3%) of the mothers reported to have started mixed feeding at 4-6 months. While 64(69.6%) of the mothers reported to have started complementary feeding just at 6 months.

Table 6: Bivariate analysis of parents' socio-demographic data and malnutrition status

Variables	Malnutrition status		Chi-square value	P value
	SAM	MAM		
Age			54.312	0
15-24	27(100%)	0(0.0%)		
25-34	12(24.5%)	37(75.5%)		
35-44	10(%)	0(0.0%)		
≥ 44	6(%)	0(0.0%)		
Gender			11.109	0.001
Male	14(100%)	0(0.0%)		
Female	41(52.6%)	37(47.4%)		
Marital status			49.755	0
Single	27(100%)	0(0.0%)		
Married	14(27.5%)	37(72.5%)		
Divorced	5(100.0%)	0(0.0%)		
Widowee	9(100.0%)	0(0.0%)		
Religious			5.894	0.02
Christian	47(56.0%)	37(44.0%)		
Islam	8(100.0%)	0(0.0%)		
Education level			33.008	0
None	20 (100.0%)	0(0.0%)		
primary	23(38.3%)	37(61.7%)		

secondary	8(100.0%)	0(0.0%)		
University	4(100.0%)	0(0.0%)		
Relationship to child			24.393	0
Mother	34(54.8%)	28(45.2%)		
Father	1(10.0%)	9(90.0%)		
Guardian	20(100.0%)	0(0.0%)		
Employment status			26.819	0
Public employed	8(100.0%)	0(0.0%)		
Private employed	26(89.7%)	3(10.3%)		
Unemployed	21(38.2%)	34(61.8%)		

Table 6: Bivariate analysis of parents' socio-demographic data and mal nutrition status

Bivalent analysis showed that all the demogphic charateristics were significantly associated with SAM

Table 4. 7. Bivariate analysis of socio – economic factors and SAM

Variables	Malnutrition status		Chi-square value	P value
	SAM	MAM		
Family income			64.737	0
Less than 50000 Rwf	34(82.9%)	7(17.1%)		
50000 to 100000 Rwf	0(0.0%)	27(100.0%)		
≥100000 Rwf	11(78.6%)	3(21.4%)		
Don't know	10(100.0%)	0(0.0%)		
Family size			57.248	0
≤3 person	27(100.0%)	0(0.0%)		
4- 6 person	7(17.9%)	32(82.1%)		
≥6	21(80.8%)	5(19.2%)		
Under five in household			28.245	0
1 child				
2 children	17(100.0%)	0(0.0%)		
3 children	17(40.5%)	25(59.5%)		
4 children	12(50.0%)	12(50.0%)		
	9(100.0%)	0(0.0%)		
Family Categories'(UBUDEHE)			75.485	0
Category 1	34(87.2%)	5(12.8%)		
Categories 2	0(0.0%)	30(100.0%)		
Categories 3	10(83.3%)	2(16.7%)		

Don't know	11(100.0%)	0(0.0%)		
Caw by family			25.239	0
Yes	16(100.0%)	0(0.0%)		
No	18(78.3%)	5(21.7%)		
Type of Medical insolvency			14.864	0
RSSB	4(100.0%)	0(0.0%)		
M.S	30(58.8%)	21(41.2%)		
Others (specify)	0(0.0%)	9(100.0%)		

Table 7: Bivariate analysis of socio – economic factors and SAM

Bivariate analysis showed that all the socio economic characteristics are significant associated with severe acute malnutrition among under five children p-value is significant less than 0.005

Table 8. Bivariate analysis of Child related characteristics to SAM and MAM

Variables	Malnutrition status		Chi-square	P value
	SAM	MAM		
Status of child at birth			32.914	0
Term	34(77.3%)	10(22.7%)		
preterm	9(25.0%)	27(75.0%)		
post term	12(100.0%)	0(0.0%)		
Weight at birth			23.728	0
< 1kg	8(100.0%)	0(0.0%)		
1000 - 1500 gr	15(100.0%)	0(0.0%)		
1500 – 2500grams	11(40.7%)	16(59.3%)		
≥2500grams	21(50.0%)	21(50.0%)		
Age of child			26.517	0
0 - 6 months	9(100.0%)	0(0.0%)		
7-12 months	14(100.0%)	0(0.0%)		
13-24 months	11(34.4%)	21(65.6%)		
25-59 months				
Child's Sex			18.718	0
Male	34(85.0%)	6(15.0%)		
Female	21(59.6%)	31(59.6%)		

Table 8: Child related characteristics to SAM and MAM

This bivariate analysis of health child characteristics almost are significant p-value is less than 0.005.

Table 9 : Respondent health related characteristics

Variables	Malnutrition status		Chi-square	P value
	Yes (SAM)	No (MAM)		
Age at last birthday			74.699	0
≤21 years	29(100.0%)	0(0.0%)		
≥21years	5(12.5%)	35(87.5%)		
Unknown	21(91.3%)	2(8.7%)		
Family planning			10.73	0.001
Yes	34(77.3%)	10(22.7%)		
No	21(43.8%)	27(56.3%)		
Birth interval			57.578	0
≤1year	27(100.0%)	0(0.0%)		
1-2 years	7(23.3%)	23(76.7%)		
2-5 years	7(33.3%)	14(66.7%)		
≥5years	14(100.0%)	0(0.0%)		
Pregnant status			36.046	0
Yes	21(100.0%)	0(0.0%)		
No	24(39.3%)	37(60.7%)		
N/A	10(100.0%)	0(0.0%)		
Health Insurance			11.109	0.001
Yes	41(52.6%)	37(47.4%)		
No	14(100.0%)	0(0.0%)		
Parents' life style			8.492	0.012
Alcohol user	34(52.3%)	31(47.7%)		
Smoker/ drug abuse	12(66.7%)	6(33.3%)		
N/A	9(100.0%)	0(0.0%)		

Child'health related characteristics to SAM

chronic Diseases			36	0
Yes	34(100.0%)	0(0.0%)		
No	21(36.2%)	37(63.8%)		
Vitamin A supplementation			16	0
Received	37(50.0%)	37(50.0%)		
Not received	5(100.0%)	0(0.0%)		
Not sure	13(100.0%)	0(0.0%)		
Immunization status			9.4	0.007
Up to date	34(65.4%)	18(34.6%)		
Not up to date	0(0.0%)	6(100.0%)		
Completion	21(61.8%)	13(38.2%)		
Anti-helminthic worming			13	0.002
Received	34(60.7%)	22(39.3%)		
Not received	10(40.0%)	15(60.0%)		
Don't know	11(100.0%)	0(0.0%)		
Child's appetite			23	0
Satisfactory	25(100.0%)	0(0.0%)		
Unsatisfactory	30(44.8%)	37(55.2%)		
Breastfeeding			82	0
Still currentlybreastfeeding	31(100.0%)	0(0.0%)		
0 to 3 months	3(42.9%)	4(57.1%)		
3 to 6 months	0(0.0%)	27(100.0%)		
> 1year	11(64.7%)	6(35.3%)		
Never breastfeed	10(100.0%)	0(0.0%)		
exclusive / mixed breastfeeding			22	0
Exclusive breastfeeding	17(100.0%)	0(0.0%)		
Mixed	17(41.5%)	24(58.5%)		
Exclusive and mixed	17(56.7%)	13(43.3%)		
Not sure	4(100.0%)	0(0.0%)		
Weaning time			63	0
0-6 months	10(100.0%)	0(0.0%)		
≤12 months	16(100.0%)	0(0.0%)		
13-18 months	8(36.4%)	14(63.6%)		
19-24 months	4(14.8%)	23(85.2%)		
>2 years	17(100.0%)	0(0.0%)		

Table 9: Respondent health related characteristics

Multiple logistic regression of variables that associated with SAM

Variables	OR	95%CI	P.value
Age in years			
15-24	1.453	0.977-1.786	0.011
25-34	1.243	1.123-2.086	0.063
35-44 ≥ 44 (reference)	0.653	0.324-9.043	0.132
Marital status			
Single	1.113	0.532-1.481	0.133
Married	1.274	0.641-1.541	0.095
Widower/Widow (Ref)			
Religious			
Christian	1.342	0.643-1.574	0.123
Islam (Ref)			
Education level			
none	1.164	0.743-1.464	0.258
primary	1.348	0.923-1.5954	0.111
secondary	0.412	9.011- 1.506	0.094
University (Ref)			
Employment status			
Employed formally	0.544	0.121-0.1.023	0.071
Employed informally	0.319	0.231-0.651	0.083
Unemployed (Ref)			
Family income			
≤ 50000 Rwf	1.386	0.713-1.486	0.098
50000- 100000 Rwf	1.123	0.571-1.524	0.123
≥ 100000 Rwf(Ref)			
Family size			
Less than or equal to 3 person	0.423	0.221-0.786	0.093
4 to 6 person	1.153	0.634-1.551	0.113
6 person and above (Ref)			
Children under the age of five in household			
1 child	1.122	0.754-1.532	0.331

2 children	1.021	0.911-1.404	0.413
3 children	0.451	0.222-0.9341	
4 children (Ref)			
Family Categories'(UBUDEHE)		1.211-4.561	
Category 1	1.543	0.312-1.886	0.321
Categories 2	0.786		0.213
Categories 3 (Ref)			0.311
Caw by family/ girinka if Category 1		0.1634-1.200	
Yes	0.432		0.047
No (Ref)			0.194
Type of Medical insolence		0.132-0.995	
RSSB	0.453		
M.S(Ref)			0.071
Status of child at birth		0.223-0.776	
Term	0.301	0.231-1.032	
preterm	0.742		0.143
post term (Ref)			
Weight at birth		0.123-1.614	
ELBW< 1kg	1.165	0.731-1.665	0.244
1000 - 1500 gr	1.313		0.321
	0.532	0.265-1.454	
Low birth weight (1500 - 2500grams)			
above 2500grams (Ref)			0.093
Age of child in months	1.221	0.975-1.467	
0 - 6 months	0.732	0.389-1.353	0.112
7-12 months			0.123
13-24 months (Ref)			
Child's Sex	1.034	0.5212-1.575	0.132
M			0.924
F(Ref)			
age in year at last birthday	2.032	1.423-2.761	
Less than 21 years(Younger age			0.092
above 21years(Old age) (Ref)			
Family planning methods	1.156	0.376-1.535	
			0.032

yes			
no(Ref)			
Birth interval	1.203	0.832-1.432	0.132
Below 1year	0.776	0.324-1.324	
1-2 years	1.112	0.843-1.423	
2-5 years			0.121
Above 5years(Ref)			0.213
pregnant status	0.923	0.654-1.321	0.142
yes			
no (Ref)			
family Medical Insurance	0.932	0.564-1.321	0.321
yes			
no (Ref)			
parents' Life style	1.541	1.342-1.977	
Alcohol user			
Smoker/Drug abuse (Ref)			
chronic Diseases	1.764	1.231-2.654	0.031
yes			
no(Ref)			
Child on medication?	1.921	1.412-3.211	0.024
yes			
no(Ref)			
vitamin A supplementation	0.453	0.221-1.211	0.045
Received			
Not received(Ref)			
immunization status	0.621	0.132-1.221	0.442
Up to date	0.821	0.523-1.456	
Not up to date			
Completion (Ref)			0.432
anti-helminthic worming	0.953	0.543-1.432	0.325
Received			
Not received(Ref)			
child's appetite	0.653	0.434-1.764	0.436

Satisfactory			
Unsatisfactory (Ref)			
Brestfeeding	0.853	0.543-1.654	0.247
Still currentlybreastfeeding	0.784	0.564-1.654	
0 to 3 months	0.675	0.453-1.583	
3 to 6 months	0.465	0.221-9.043	0.213
Above one year			0.132
Never breastfeed (Ref)			0.132
exclusive / mixed breastfeeding	0.913	0.435-1.685	0.094
Exclusive breastfeeding	1.211	0.743-1.576	
Mixed			
Exclusive for some time then(Ref)			0.132
If artificial feeding which food	0.987	0.654-1.453	0.232
Cow milk			
infant formula(Ref)			
When Introduce mixed feeding			0.143
0-3 months	1.874	1.546-2.987	
4-6 months(Ref)			
Weaning time			0.034
0-6 months	0.678	0.453-1.231	
Less than 12 months	1.134	0.643-1.543	
13-18 months	0.943	0.564-1.465	
19-24 months	1.121	0.675-1.435	0.121
Above 2 years(Ref)			0.943
Education about malnutrition, on balanced diet ,child growth...			0.531
Yes			0.131
No (Ref)	0.432	0.212-0.964	0.032

Table 10: Multiple logistic regression of variables that associated with SAM

years were significantly associated with SAM. (OR=1.453,P=0.011,95%CI=0.977-1.786). respondents who reported being in category 1 were associated to SAM (OR=1.543, P=0.047,95%CI=1.211-4.561 . respondent reported age less than21 years at last birth day

reported association with SAM and those with less than 21 years (Younger age) were (OR=2.032, P=0.032, 95%CI=1.423-2.764). Children whose parents live style Alcohol users are more associated with severe acute (OR=1.541, P=0.031, 95%CI=1.342-1.977),

children having chronic diseases was statistically significant associated to SAM (OR=1.764, P=0.024, 95%CI=1.231-2.654), and Those who reported to be on medication had associated to severe acute malnutrition (OR=1.921, P=0.045, 95%CI=1.412-3.211). And those who reported having education about malnutrition, on balanced diet, child growth had a 56.8% reduction in the odd of having association with SAM (OR=0.432, P=0.032, 95%CI=0.212-0.964).

CHAPTER FIVE: DISCUSSIONS OF FINDINGS

5.1. INTRODUCTION

This chapter provides detailed and explained information regarding the generated findings. Illustrate isolated proportion of severe acute malnutrition and their associated factors either socio demographic, socioeconomic and health related characteristic. They are explained with supporting previous studies. Finally, these findings will help to build conclusion and provide recommendations to different levels.

5.2. DISCUSSION AND INTERPRETATION OF FINDINGS IN ACCORDANCE WITH THE OBJECTIVES

This research intended to explore prevalence and factors associated with Severe Acute Malnutrition among under five years children under at Kibagabaga District Hospital (Gasabo District).

5.3. THE ISOLATED PROPORTION OF SEVERE ACUTE MALNUTRITION AMONG UNDER FIVE CHILDREN IN KIBAGABAGA HOSPITAL

The present study reported that the majority(59.8.%) of under five children suffering from acute malnutrition were hospitalized for severe acute malnutrition, Around the Globe, severe acute malnutrition in child hood is among the four leading cause of mortality, World Health Organization (WHO2013) reported the severe acute malnutrition, this was supported by the study done by Kavosi et al., (2014) which found that a half of under five were suffering from acute malnutrition.

In the report of National Institute of Statistics of Rwanda, (2016), it has been found that 23%of children under five were stunted in Gasabo District.while more than one third of under five at national level were stunted, this is supported by the findings of the present study which reported that acute severe malnutrition is prevalent even district hospitals in Kigali (National Institute of Statistics of Rwanda, 2016)

However, the small difference were found in a study done by in India Bhadoria et al., (2017) in which the prevalence acute severe malnutrition in under five children admitted to the

hospital for SAM in northern district of India conclude that the isolated proportion of SAM was a half, the reason may be the difference in income of those two countries (Bhadoria et al., 2017).

5.4. FACTORS CONTRIBUTING TO ACUTE SEVERE ACUTE MALNUTRITION AMONG UNDER FIVE YEARS CHILDREN

The demographic characteristics of participants revealed that almost half of respondents were parents ranging from 25-34 Years old, majority of them were the females, this age group suggests that this population is their productive period, they are the ones having children, this is consistent with a number of many studies. However this age group was likely to have the under five children with SAM (OR:1.453, P=0.011%; CI=0.977-1.786) The reason may be that the people with age group of 25-34 were likely to have many children (reproductive time) so the risk to SAM might be high.

The present study reported the association of parent's education level and the occurrence of SAM, the parent with secondary level OR:(0.412; P=0.094; CI=0.011- 1.506) compared with primary OR: 1.348, P=0.111, CI=0.923-1.5954). University level, this was supported by the findings of the study done by Seid who reported the positive correlation of parent's education and child health.

The children with non-educated parent was about 12.3% likely to suffer from severe acute malnutrition the reason may be the lack of knowledge and skills for baby nutrition. However the income was likely to be low in non educated parent (Seid, Seyoum and Mesfin, 2017).

Several studies reported that the educated mother utilized the health care facilities and they followed the instructions given by health providers about feeding and caring practices and this is likely to decrease the risk to SAM, this is consistent with the findings of the present study (Bain et al., 2013).

The socio economic characteristics of parents, study found that the parents with lower monthly income ($\leq$ 50,000 Rwf)-were likely to suffer from SAM (OR:1.348, $\geq$ 100,000 Rwf), this was supported by the findings of a study done in Indonesia, in which the unemployed parents were likely to have the under five suffering from SAM, the reason may be that the unemployed

parents earn few money and find the difficult to nourish their children and the likely hood to SAM increase(Bain et al., 2013).

The unemployed parents were reported to be likey to have the underfive children suffering from severe acute malnutrition (OR: 1 compared to the employed parents OR: 0.544;P=0.071 CI=0.121-0.1.023), the reason probably low productivity leadto nutrition that making their children more vulnerable to SAM , this was supported by the findings of a study done in Nepal by which reported that the parents without employment were likely to have the under five with severe acute malnutrition (Nilesh Kumar Pravana et al., 2019).

According to health history characteristics, it was revealed that Vitamin A deficient was the source of severe acute malnutrition (P .000), a study done in Nepal found that 72% of the children less than five years taking Vitamin ‘A’ supplements twice a year regularly had better health outcomes for malnutrition, diarrhea and acute respiratory infection than those who did not take one capsule or took only one time(Pravana et al., 2017), this was supporting the findings of this study, as supplementation of vitamins decreased the risk to SAM.

The present study has found that the individuals in the different categories (ubudehe), contribute to the occurence of severe acute malnutrition, the parents belonging to category one (ubudehe 1) were likely to suffer from severe acute malnutrition SAM (OR=1.543, P=0.047,95%CI=1.211-4.561), this was supported by a study done in Pakistan by Aurangzeb Sand, (2018), the reason may be the poverty with poor nutrition associated with this socially vulnerable groups of people.

Children whose parents lifestyle was being alcohol users were more associated with severe acute (OR=1.541,P=0.031,95%CI=1.342-1.977), children having chronic diseases was statistically significant associated to SAM (OR=1.764,P=0.024,95%CI=1.231-2.654),this was supported by a study done in Pakistan which reported that the children under five age suffering from the chronic diseases like chronic diarrhoea, pneumonia and others (Aurangzeb Sand et al., 2018).

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6. 1. INTRODUCTION

Chapter six is made of conclusions that are drawn from the findings of this study, and the recommendations to the health policy-makers, the administration of the hospitals, health care providers community and to the health researchers.

6.2. CONCLUSIONS

The results of this study confirm a high isolated proportion (59.8%) of severe acute malnutrition, half of under five hospitalized for malnutrition at Kibagabaga suffered from severe acute malnutrition, this may be justified by the fact that malnutrition in Rwanda is still a burden (38% of stunting in Rwanda, DHS 2015).

Many factors were identified to contribute to severe acute malnutrition, most of them were related to the parents and families in those underfive belonged. These include ; poverty, absence of one cow by family, uneducated parents, lower family monthly income, big family size, more than one under five children by family, non-users, of any family planning methods, limited child spacing, parent alcohol users, age at the first birth(younger parents).

Other factors included: low birth weight, twins, absence of Vitamin A, supplementation or regular provision of vermifuges and presence of chronic diseases.

6.3. RECOMMENDATIONS

The recommendations are formulated based on the gaps that identified during the research process, so the high isolated proportion of SAM and presence of contributing factors require the following recommendations.

To Ministry Of Health and partners: Those institutions should work jointly with district hospitals to elaborate the plan and programs to reduce and possibly eradicate the severe acute malnutrition as this is a public health challenge. The implementation of those programs need the regular monitoring and evaluation to make sure that the under five health is improving along with the implantation.

To educators and academic institutions

There is a need of including in the curriculum, the component of nutrition and prevention acute malnutrition and under five well- being.

To the administration of Kibagabaga district hospital

The hospital administration should be involved in implementation of national programs of nutrition of under five, this need the hospital commitment, plan and resources (personal and budget).

To improve supervision and follow-up to the community in their catchment areas in order to detect early case of severe acute malnutrition.

To health care providers: To focus on health education on the nutrition of under five children, and prevention of severe acute malnutrition, as well as treatment of already suffering children. supervision.

To researchers

To explore more the factors associated with severe acute malnutrition and conduct more research to elaborate the way to eradicate severe acute malnutrition in African regions.

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APPENDICES 1

CONSENT FORM ENGLISH VERSION

This informed consent form is for research titled **factors associated with severe acute malnutrition among children under five years at kibagabaga District Hospital.**

I am **Leoncie NISHIMWE**, a post graduate student in Masters of Nursing Sciences in , PEDIATRIC Track , in College of Medicine and Health Sciences, School of Nursing and Midwifery, University of Rwanda. I am doing research on factors associated with severe acute malnutrition among children under five years. Therefore, I am inviting you to participate in this study by filling voluntarily the questionnaire that will be provided to you. Please feel free to ask for more clarification if you see that some words are not well understood.

Purpose of the study: This study aims to identify factors associated with severe acute malnutrition among under- five years children. And the study results will be help to identify effective strategies to raise adequate measures to prevent or reduce, then eliminate SAM.

Selection of Participants: The parents were chosen to participate in this study because are them who know well lifestyle, nutrition day to day of our children.

Voluntary Participation: Participation in this study is voluntary. There is no any in confidence or punishment if you choose not to participate. It is not mandatory to decide today about your participation. You can think about it and tell me what you decide later.

Procedure: This study used the self- administered questionnaire for parents who have children with SAM under age five. The questionnaire will be provided and collected by the researcher. The questionnaire will address questions about factors associated with Severe Acute Malnutrition. Questionnaire was anonymous (nameless).

Duration: taken you about 15-20 minutes to fill the questionnaire that you will be provided.

Risks and Discomforts: Basically, there are no known risks or discomforts associated with this study .However, if you feel that it might have some risks or discomforts, you have the right to withdraw.

Benefits: There will be no immediate and direct benefit to you, but the study results will be used by hospital policy makers, different level of education to identify prevalence, factors and help to establish effective strategies to prevent reduce and eliminate SAM.

Reimbursements: not be provided with any payment for participating in this study.

Confidentiality: The questionnaire form will be anonymous. Only code will be used instead of your names. The completed questionnaire and observation form will be kept safely, locked with a lock and key. Your data in the computer will be kept confidentially by creating a computer password which will be known by the researcher only. No any person else except

the researcher will have right to access your information. The researcher will make sure that the computer is switched off before leaving the computer.

Sharing of results:

As this study is among academic requirements, the study results will be presented first in the school panel as academic requirement then after, the study results will be shared with participants, the senior management team, Managers of KIBAGABAGA Hospital. The study results will be anonymous, means that names will not be mentioned on them and thus the result sharing will be confidential. This activity will be achieved through meetings with the responsible personal Kibagabaga District Hospital. The written report of this study will also be availed in College of Medicine and Health Sciences Library both in soft and hard copy for easy accessibility to the users. The researcher will also publish the results in order that other interested people may learn from our research.

Right to refuse or withdraw: Participation in this study is voluntary. Choosing to participate or not will not affect you at all. You may choose to stop participating in the study at any time that you wish without any problem .it is your full right.

Who to contact:

If you have any questions you may ask them now or later. If you wish to ask questions late , you may contact Leoncie NISHIMWE on 0788662773 ,email:nileoncie12@gmail.com

This proposal has been reviewed and approved by College of Medicine and Health Sciences Institute Review Board (CMHS IRB), which is a committee whose task is to make sure that research participants are protected from harm. If you wish to find more about IRB

CONTACT: Chairperson: +250788490522, Deputy Chairperson: +250783340040

Certificate of Consent:

I have read the foregoing information about this study and I have had the opportunity to ask

Questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this study.

Name of participant:_____

Signature of participant:_____

Date (Day/Month/Year):_____

Statement by the researcher/person taking content:

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by him/her have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily,

Name and Signature of the Researcher: _____

Date(Day/Month/Year): _____

CONSENT FORM KINYARWANDA VERSION

AMASEZERANO YO KWEMERA GUTANGA AMAKURU KU BUSHAKASHATSI URUHARE MUBUSHAKASHATSI

Aya makuru ashingiye ku kugaragaza imamvu zo kwiyongera kw'imirire mibi mu bana bari muni y'inyaka itanu ku bitaro by'Akarere ka Gasabo bya Kibagabaga.

Umushakashatsi: Mrs **Leoncie NISHIMWE**, Kaminuza y'uRwanda

Ndi Leoncie NISHIMWE, Umunyeshuri muri Kaminuza icyiciro cya Masters umuforokazi mu Buvuzi bwabana , mu Ishuri rikuru ry'Ubuvuzi n'Ubumenyamuntu , ry Kaminuza y'uRwanda.

Ndimu nkora ubushakashatsi k'Ubwiganze n'impamvu zitera Imirire mibi mu bana bari muni y'inyaka itanu. Ni yo mpamvu nifuje ko mwamfasha mukagira uruhare muri ubu bushakashatsi, mwuzuka ku bushake uru rupapuro. Ahari amagambo akeneye ubusobanuro bw'inyongera mwabaza .

Intego y'ubushakashatsi: Ubu bushakashatsi bugamije kumenya uko ubwiyongere n'ingaruka z'imirire mibi mu bana bari muni y'inyaka itanu. Ubushakashatsi rero bukazafasha mu kwerekana ingamba zafasha kugaragaza ibipimo byo kwirinda cyangwa kugabanya , ndetse bikaba byanageza ku kurandura ingaruka z'imirire mibi.

Abo ubushakashatsi bureba: Ababeyi bafite abana bafite imirire mibi ikabije na bafite abana bakize buaki bashyizwe mu bagomba kubazwa muri ubu bushakashatsi ni uko ari bo baba bazi neza imibereho y'abana babo n'imirire yabo umunsi ku muni.

Gusubiza ibi bibazo ni ubukoranabushake: Kugira uruhare muri ubu bushakashatsi ni ubushake. Ntangufu cyangwase igihano gihawa utemeye kugira uruhare mu bushakashatsi. Nta tegeko rihari ko wakora muri ubu bushakashatsi nonaha, birashoboka ko wabitekerezaho ,hanyuma ugafata icyemezo uko ubishaka.

Uko ubushakashatsi buzakorwa:

Ubu bushakashatsi bugizwe nimpapuro zigenewe ababyeyi bafite abana bafite ikibazo cy'imirire mibi bakaba bari no munsu y'umyaka itanu. Ibyavuye mu bushakashatsi bizakusanywa n'umushakashatsi. Ibibazo bizaba bishingiye ku kureba uko ikibazo cy'imirire mibi kigenda cyiyongera. Impapuro zuzuzwa nta nta mazina y'uwoyujye yandikwaho.

Igihe :Gusubiza ibi bibazo uhawe bimara iminota hagati ya 15.-20

Ingaruka /impungenge zaba mu gusubiza ubibazo:

Kugeza ubu ta garuka izarizo zose zava mu gusubiza ibi bibazo. Nubwo bimeze bityo, uramutse uketse ko hari ingaruka mbi yava muri ibi bibazo, wahitamo kubireka.

Inyungu: Nta nyungu z'ako kanya wahita ubona,ariko ibizava muri ubu bushakashatsi bizifashishwa n'abakora igenamigambi munzego zinyuranye nk 'ibitaro mu kwiga no kumenya uko ikibazo cy'imirire mibi mu bana bari munsu y'umyaka itanu cyashiraho burundu.

Ubwishyu:Nta bwishyu na bumwe uhabwa kuko wasubije ibi bibazo,gusubiza nubushake

Icyizere: usubiza ibi bibazo nta myirondoro ye icyaho. Hazakoreshwa umubare w'ibanga mu mwanya w'amazina yawe. Impapuro zamaze kuzuzwa zibikanwa umutekano,zibikwa ahantu hafunzwe n'ingufuri n'urufungzo. Uburyo bizabikwamo muri mudasobwa buzaba bwizewe ndetse na mudasobwa izaba ifungishwa umubare w'ibanga ukamenywa n'umushakashatsi gusa.

Nta wundi muntu uwariwe wese uzagira ububasha uretse . Umushakashatsi azagenzura neza ububiko buayamakuru.

Uko ibyavuye muri ubu bushakashatsi buhererekanwa: Kubere ko ubu bushakashatsi bufite aho buhuriye n'umyigire, ibyavuyemo bizashyirwa mbere na mbere mu bagize ibiganiro mpaka hanyuma ibivuyemo bikagezwa ku nzego zibishinzwe;inzego nkuru ; abayobozi b'ibitaro bya Kibagabaga. Ibyavuye mu bushakashatsi ntawe uzaba abibazwa, ni ukuvuga ko kuba nta mazina bivuze ko bizanahanahana mu babikeneye mu cyizere gikomeye. Ibyari bigamijwe na byo bizagerwaho binyuzemu nama ndetse no ku bayobozi ba Kibagabagal. Kandi ibyavuye mu bushakashatsi bizanashyirwa mu isomero y'urwanda ishamba ry'ubuvuzi n'iyigabuzima haba mu buryo bw'impapuro cyangwa buryo bw'ikoranabuhanga rya mudasobwa. Ibi bisubizo kandi nanone bizatangazwa kugirango abiga babikoreshe.

Uburengazira : Kuba umwe mu bamfasha mu bushakasha ni ubushake. Guhitamo gukorana cyangwa kubanga ntacyo byaguhungabanyaho. Ku bushake bwawe ushobora guhagarika ibikorwa byariyeho byose byiyanye n'ubushakashatsi, ni amahitamo yawe.

Ugize ikibazo wabaza:

Uramutse ugize ikibazo icyo aricyo cyose kuri ibi bibazo wakibaza aka kanya cyangwa nyuma yo kuzuza. Wahamagara:

Leoncie NISHIMWE kuri Telefoni igendanwa:+250 0788662773

,Imeri l:nileoncie12@gmail. com

Ubu bushakashatsi bwagenzuwe kandi bwemezwa n'inteko ibishinzwe ya Kaminuza (CMHS IRB), ari na yo ishinze kugenzura ko abifashishijwe mu bushakashatsi barinzwe mu mutekano uhagije. Ushaka ibindi bisobanuro wabariza kuri(IRB)

Inimero z'abayobozi: Chairperson: +250788490522, Deputy Chairperson: +250783340040

Maze gusoma/gusomerwa neza no gusobanurirwa, amakuru agenga ubu bushakashatsi,nagize amahirwe yo kubaza ibibazo bibushingiyeho. Buri kibazo kibazwa byasubijwe ku rugero ruhagije. Nanjye niyemeje ku bushake bwanje kugira uruhare muri ubu bushakashatsi.

Amazina y'usubiza:_____

Umukono :_____

Itarikiki(umunsi/ukwezi;umwaka):_____

Maze kwemeranya n'ibyavuzwe haruguru kandi mazegusobanura no guha ubazwa umwanya wokubaza ibibazo no kumuha ibisobanuro byumvikana, nemeye kubushake bwange ko ugira uruhare mubushakashatsi.

Umukono w'uwitabiriye Itariki/..... /20...

QUESTIONNAIRE

QUESTIONNAIRE ENGLISH VERSION

Instructions

This questionnaire is made up of three sections A, B, C

Use this sign (x) to choose an appropriate answer

This questionnaire is made up of closed ended questions only

SECTION A: SOCIAL DEMOGRAPHIC FACTORS REGARDING PARENT

1. Parents related factors

N°	VARIABLES	Items	ANSWERS	
			YES	NO
Q1	Age Ages of respondent, how old are you? In (year)	1= 15-24		
		2= 25-34		
		3= 35-44		
		4= Above 44 years old		
Q2	Gender	1= Male		
		2= Female		
Q3	Marital status What is your current marital status?	1= living alone (Single never married)		
		2= living together (Married and cohabiting)		
		3= separated or divorced		
		4= Widower/Widow		
Q4	Religious What is your religion?	1= Christian		
		2= Islam		
Q5	Education level What is the highest level of education that you have completed?	1= none		
		2= primary		
		3= secondary		
		4=University		
Q6	Who is respondent to child?	1= Mother		
		2= Father		
		3= Others (Specify)		
Q7	Employment status What is your primary occupation	1= Employed formally		
		2= Employed informally		
		3= Unemployed		

SECTION B: SOCIO-ECONOMIC FACTORS

Q8	Family income What is your monthly family income?	1= Less than 50000 Rwf		
		2=50000 to 100000 Rwf		
		3= More than or equal to 100000 Rwf		

		4= Don't know		
Q9	Family size How many children do you have in your household?	1= Less than or equal to 3		
		2= 4 to 6		
		3= ≥ 6		
Q10	Children under 5years Of these, how many are between the ages of 0 and 5 years? , How many children under the age of five are in your household?	1= child		
		2 =children		
		3= children		
		4= children		
		5= and above		
Q11	Family Categories'(UBUDEHE)	1= Cat 1		
		2= Cat 2		
		3= Cat3		
		4=Cat4		
		5= don't known		
Q12	Caw by family/ girinka munyarwanda if Category 1	Yes		
		No		
Q13	Did you have medical insurance? Family Medical insurance including child who suffer from SAM	yes		
		no		
Q14	If yes which for this	RSSB		
		M.S		
		Others (specify)		
2.Children related factors				
Q15	Status of child at birth	1= Term		
		2= preterm		
		3= post term		
Q16	Weight at birth	1= ELBW< 1kg		
		2= VLBW< 1500gr		
		3= Low birth weight (<2500grams)		
		4= normal weight (≥ 2500 grams)		
Q17	Age of child in months How old is	1= 0-6 months		
		2= 7-12 months		
		3= 13-24 months		
		4= 25 to 59 months		
Q18	Sex What is child sex?	M		
		F		
Q19	Diagnosis at admission	1= SAM		
		2= Other medical condition associated with MAM		

SECTION C: HEALTH; FEEDING RELATED FACTORS DATA				
3. The Factors related to the Parents' health data and household data				
Q20	What is your age in year at last birthday	Less than 21 years(Younger age)		
		above 21years(Old age)		
		Unknown		
Q21	Use of Family planning methods	Yes no		
Q22	Birth interval	Below 1year		
		1-2 years		
		2-5 years		
		Above 5years		
Q23	Are you pregnant now? (Choose N/A if respondent is male)	1= YES		
		2= NOT		
		3= N/ A		
Q24	Do you have family Medical Insurance			
Q25	How was parents' Life style	Alcohol user		
		Drug abuse user		
		smoker		
		sex worker		
		N/A		
The Child's health, nutrition& feeding data related.				
Q26	Child have you chronic Diseases as	Yes No		
Q27	If yes which for this chronic condition			
		HIV		
		CHD		
		ASTHMA		
		HIE		
		CANCER		
		CHRONIC DIARRHREA		
	Others (specify)			
Q28	Is the child on medication?	Yes No		
Q29	IF YES, what medication...	1= ARVs		
		2=diulatics(Lasix, aldactone)		
		3=for HIE (depakin)		
		4=Anti-cancer		
		5=Others.		
Q30	How long on medication?	Short term		
		Long term		

		unknown		
Q31	How was the vitamin A supplementation at the admission or in community?	Received		
		Not received		
		Not sure		
Q32	Haw was immunization status by time of admission	Up to date		
		Not up to date		
		Completion		
		Not sure		
Q33	How was the anti-helminthic (intestinal worms)?	Received		
		Not received		
		Don't known		
Q34	How is the child's appetite on regular basic day?	Good		
		Satisfactory		
		Unsatisfactory		
Q35	How long has the child been breastfeed?	Still currently breastfeeding		
		0 to 3 months		
		3 to 6 months		
		Above one year		
		Never breastfeed		
Q36	Was it exclusive breastfeeding or mixed feeding?	Breastfeed only/Exclusive breastfeeding		
		Mixed		
		Exclusive for some time then mixed		
		Not sure		
Q37	If artificial feeding, which kind of food did you provide?	1= Cow milk		
		2= infant formula		
		3= Other liquid food(specify)		
Q38	If yes mixed, how old was baby when you started mixed feeding?	0-3 months		
		4-6 months		
		Above 6 months		
Q39	At what age did you wean your child?	0-6 months		
		Less than 12 months		
		13-18 months		
		19-24 months		
		Above 2 years		
Q40	If complementary feeding, When was it started?	1=at 6 months		
		2 =above 6months		
Q41	Were you educated, informed on balanced diet, growth and	1=Yes		
		2=No		

	Development, nutrition to avoid malnutrition for your child by community health workers, or health providers?			
--	---	--	--	--

THANK YOU

IBIBAZO MUKINYARWANDA

URUPAPURO RW'IBIBAZO: Kugaragaza impamvu z'ikibazo cy'imirire mibi mu bana bari muni y'inyaka itanu

Intangiriro: uraritswe kugira uruhare muri ubu bushakashatsi bugamije ku kugira imyumvire imwe n'amakuru ahagije kureba ubwiyongere n'impamvu zitera kwiyongera kw'ikibazo cy'imirire mibi mu bana batarengeje imyaka itanu. Buzakorerwa ku bitaro by'Akarere bya KIBAGABAGA. Harasabwa byibuze iminota 10 kuba umaze kuzuza.

Ese ni ku bushake bwawe gushyirwa? Yego ☐ Oya ☐

ICYICIRO CYA MBERE: Ibibazo ku bijyanye n'imibereho rusange n'imyirondoro yushyirwa

1. Imyaka yawe: 15-24 ☐ 25-34 ☐ 35-44 ☐ hejuru ya 44 ☐

2. Igitsina: gabo ☐ Gore ☐

3. Irangamimerere: uribana ☐ warashatse ☐ Mwaratandukanye ☐ umupfakazi ☐
mubana mudasezeranye cyangwa mudasezeranye ☐

4. Idini: Gaturika ☐ umuporoso ☐ Umuyisiramubwije ☐ umudive ☐ ntaryo
☐ irindi, sobanura.....

5. Amashuri ufite: ntiyize ☐ Primeri ☐ Ayisumbuye ☐ Kaminuza ☐

6. Uri nyina w'abana? nyina ☐ , ise ☐ umubyeyi umurera ☐

7. Ufite akazi? ntakazi ☐ umukosi wa leta ☐ uwikorera ☐

IGICE CYA KABIRI: Amakuru kumibereho n'ubukungu

8. Umushahara ku kwezi: $\leq 50.000 = 1$ $50.000 - 100.000 = 2$ $> 100.000 = 3$
ntuzwi = 4

9. Ufite umuryango wabantu bangahe? 2-3 4-6 hejuru ya 6

10. Ni abana bangahe bari muni y'imyaka 5 mu rugo? : 1 2 3 hejuru ya 3

11. Uri mukiciro cya kangahe cy'ubudehe? 1 2 3 4
ntacyo nzi

12. Girinkamunyarwanda niba uri mu kiciro cya mbere: Yego oya

13. ufite ubuishingizi bukwivuzwa kumuryango wawe?

14. Ni ubuhe? mituwere RAMA ubundi

Amakuru kumwana

15. Imyaka (mu mezi) 6 akivukakugeza kumezi 7-umwaka 1 13-imyaka 2
24-59

16. igitsina: Gore Gabo

17. Umwana wawe yavukiye igihe? Yavutse yuzuye yavutse mbere yigihe
yarengeje igihe

18..Ibiro yavukanye: ibiro bike (<2500g) ibiro bya nyabyo (≥ 2500 grams)

19. Ibipimo yafashwe/ uburwayi bwe: imirire mibi ikabije imirire mibi mu rugero
ibindi bisubizo bijyanye nimirire mibi

20. Yarangije inkingo: yego =1 oya=2

21..niyihe ngenga bihe yo gukingiza :

Kugeza ku itariki=1 atagejeje ku itariki utabyibuka neza

ICYICIRO CYA GATATU: UBUZIMA; IMIRIRE N'ANDI MAKURU BIJYANYE

22. Imyaka aheruka kubyara afite: Minsi ya 21 hejuru 21

23. Intera hagati yo gukurikiza umwana n' undi?: umwaka imyaka 2 imyaka 3
 imyaka 5

24. Ukoresha uburyo bwo kuboneza?: yego=1 oya =2

25. Mufite ubwisungane mu kwivuzwa bwuyu mwana?: Yego =1 oya=2

26. Imibereho y'ababyeyi :unywa ibisindisha ukoresha ibiyobyabwenge?,inzoga , imiti
 ikindi

27. umwana yaba afite ubumuga indwara idakira?:Virusi ya SIDA CHD , kuvuka ananiwe kanseri ikindi , kivuge-----

28Umwana wawe abakumiti? Yego, oya

29. Imiti yigihe kingana iki? gito kirekire ntabyo uzi

30. Ni imiti uvura iki?

31. Umwana wawe yahawe imiti yinzoka zo munda? yego oya simizi neza

32. Apeti y'umwana ku munsu iteye ite? byiza=1 bihagije=2 bidahagije =3
ntabyo nzi=4

33. umwana yabonye ibyunganira Vitamini A ? yego oya ntubizi

34. Yonse igihe kingana iki kuva avutse?

Aracyonka=1 ukwezi 0-3 , amezi 3-6 ntiyonse

35. umwana wawe aronka gusa cya uramuvangira ? konka gusa , ndamuvangira

36. watangiye kumuvangira ryari? Akivukakugeza kumezi 3 kuri 4 kugeza kuri 6
hejuru ya 6

37. umuvangira amashereka niki kindi? Amata y'inka amatayifu yabana ibindi

38. Yacukiye imyaka ingahe? munsu y'umwaka 1-1nigice 1nigice kugeza kuri 2
 hejuru yibiri

39. Yatangiye ryari imfasha bere ? ku mezi 6 hejuru yamezi 6

40. Waba warahawe inama kubijyanye n'iyi yuzuye, imikurire y'umwana, kuirinda imirire mibi n; abajyanama, abakozi bubuzima? yego oya

MURAKOZE.



Leoncie NISHIMWE

College of Medecine and Health Sciences

School of Nursing and Midwifery

Remera Cumpus

Phone: 0788662773

Email: nileoncie12@gmail.com

Kigali on 12th / Feb /2019.

To The General Director of
Kibagabaga Hospital.

Dear Sir,

RE-REQUEST FOR DATA COLLECTION

Referring to above subject, I am Leoncie NISHIMWE/218000735 a post graduate student in program of Master of Science in Nursing, **Pediatric track**, at University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery. I, hereby request permission for data collection, research dissertation is entitled "**Prevalence and Factors associated with severe acute malnutrition among children under five years old at Kibagabaga district hospital, Rwanda**" This exercise will take 1 months starting from February 2019 – March 2019.

I am looking forward to hearing from you.

Yours sincerely

Leoncie NISHIMWE


12/2/2019





COLLEGE OF MEDICINE AND HEALTH SCIENCES

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 12/02/2019
Ref: CMHS/IRB/086/2019

NISHIMWE Leoncie
School of Nursing and Midwifery, CMHS, UR

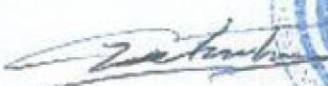
Dear NISHIMWE Leoncie

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled "*Prevalence And Factors Associated With Severe Acute Malnutrition Among Children Under Five Years Old At Kibagabaga District Hospital, Rwanda*"

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.


Professor Jean Bosco GAHUTU
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR



COLLEGE OF MEDICINE AND HEALTH SCIENCES

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 12/02/2019
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School of Nursing and Midwifery, CMHS, UR

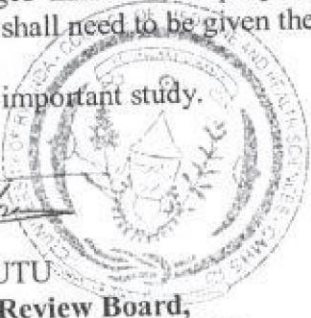
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Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

Certificate of Completion

