

**FACTORS ASSOCIATED WITH DIARRHEA AMONG CHILDREN UNDER FIVE
YEARS IN KALUNGU SUBCOUNTY KALUNGU DISTRICT**

BY

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DCM/0011/141/DU

**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF ALLIED
HEALTH SCIENCES IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF AWARD OF A DIPLOMA IN CLINICAL
MEDICINE AND COMMUNITY HEALTH OF KAMPALA
INTERNATIONAL UNIVERSITY**

JULY, 2017

DECLARATION

I Kiwalabye Ronald hereby declare that this research report is my original work and has not been submitted to any university or institution of higher learning for any academic award.

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Sign.......... Date.....12-08-2017.....

(Student)

SUPERVISOR'S APPROVAL

I hereby accept that this research proposal presented is the original work of the above named student who has been under my supervision throughout the study period. I approve it to School of Allied Health Sciences.

Dr. ODWEE AMBROSE

Signature.....

Date.....

DEDICATION

This dissertation is a special dedication to my beloved mother Mrs. Nayiga Agnes Kayiwa and my father Mr. Kayiwa Vicent who struggled a lot for my future and prosperity with timeless support for the active period of my studies.

I also honor my sister Nakayiwa Flavia, My cousin Judith Dembe plus all other relatives for the financial support and encouragement they have offered me.

Finally I dedicate this dissertation to my Auntie; the late Namazzi Christine for you initiated me to what is soon becoming my future. May your soul rest eternally in peace.

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LIST OF ACRONYMS

CDC	Center for Disease Control
CDD	Control for Diarrheal Disease
UNICEF	United Nations International Children's Emergency Fund
W.H.O	World Health Organization
MCH	Maternal and Child Health
WSP	Water and Sanitation Program
AIDS	Acquired Immunodeficiency syndrome
SPSS	Statistical Product for Social Scientists
HC VI	Health Center Four

OPERATIONAL DEFINITIONS

Developing Country: A country becoming economically more mature, industrialized and advanced.

Diarrhea: Is the passage of 3 or more loose stools per day

Disease burden: This is the impact of a health problem as measured by financial cost, mortality, morbidity, or other indicators.

Epidemic: A wide spread of an infectious disease in a community at a particular time

Episode: An incident or period considered in isolation

Mortality: The condition of being susceptible to death.

Risk Factor: A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or an injury (WHO)

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ABSTRACT

INTRODUCTION: In Uganda Diarrhea contributes 14% to the Under-5 mortality.

STUDY OBJECTIVE: The aim of this study was to assess the risk factors predisposing children below 5 years of age in Kalungu district, Kalungu Sub County.

METHOD: This study was cross sectional in nature. A Simple random sampling method was used for qualitative data collection. Data was collected by conducting in-depth interview with the mothers available at the homes during the time of data collection and was. Data was presented using tables and be analyzed electronically using Statistical Product for Social Scientists (SPSS) version 17 In SPSS and excel 2010.

RESULTS: Considering demographic data specifically age 20(26%) were between 2-11 months, 21(27%) were between 1-2 years 35(46%) were between 3-5 years. Considering the hygiene of children, 10(13.3%) cases were identified in children who could wash their hands after using the toilet, 36(47.3%) cases were identified in children who could not wash their hands after using the toilet. Considering ownership of the toilet facility, 31(40.7%) cases were identified in children who privately owned toilet facilities and 45(59.3%) cases were identified in children whose homes shared the toilet facility with other people Concerning the mode of water treatment, 20(26.4%) cases were identified in children whose families treated water by boiling, 4(5.2%) cases were identified in children whose families treated their water by chlorination, and 52(68.4%) cases were identified in children whose families dint treat water in anyway.

CONCLUSION: Diarrhea was more in children above 3 years because they are more exposed to the environment and germs, children with, children with poor hygienic practices were found to have experienced diarrhea more than those with un hygienic practices, children living in homes with shared toilet facilities because sharing toilets making them unhygienic thus. Homes that dint treat water had more risk of developing diarrhea because diarrheal germs live in un boiled water.

RECOMMENDATION: Health education about the causes of diarrhea and preventive measures should be intensified by the government. More health educators should be trained to increase the man power and to cover a wider area.

CHAPTER ONE

1.0 INTRODUCTION

This chapter will consist of background of diarrhea globally, regionally and in Uganda.

1.1 BACK GROUND

Diarrhea is defined as an increase in the number of stools over what is

Globally, 2,195 Children die daily of diarrhea-that's like losing nearly 32 school buses full of children each day. Diarrhea kills more children than AIDS, malaria and measles combined (CDC, 2015). In 2015, 5.9 Million children around the world died before reaching their fifth birth day, of these 5.9 Million deaths, Diarrhea was responsible for 9% making it one of the two leading killers of children worldwide; with Pneumonia (Nguyen,2015). Globally, 780 million individuals lack access to improved drinking-water and 2.5 million lack improved sanitation (WHO 2015). This predisposes a very large proportion of the world's population to the risk of getting the deadly disease.

In Sub- Saharan Africa, Most deaths from diarrhea occur among children less than 2 years of age (UNICEF, 2016). Sub-Saharan Africa remains the region with the highest under-five mortality in all regions in the world, with one child of 12 dying before his or her fifth birthday-far higher than the average ratio of 1 child in 147 in high-income countries (UNICEF, 2016).Of all child deaths from diarrhea, 78% occur in the African and South-East Asian regions(WGO,2012). For children with HIV, diarrhea is even more deadly; the death rate for these children is 11 times higher than the rate for children without HIV (CDD, 2015)

In Uganda, Diarrhea contributes 14% to the Under-5 mortality (MOH. 2008). 13.8 million Ugandans use unsanitary or shared latrines; 3.2 million have no latrine at all and defecate in the open (WSP, 2015). These factors have probably kept the Mortality rate that high.88% of the diarrheal deaths are attributed to the fecal oral route.

In the year 2000, Uganda had the highest number of under-five child death (145,000) in the world and is one of the 42 countries in the world that contribute about 90% of all under five

childhood deaths in the world (Black *et al*, 2013). Rota virus and *Escherichia coli* are the two most common etiological agents of diarrhea in developing countries. (WHO 2015). Rota virus is the leading cause of acute diarrhea and causes about 40% of children hospitalization for diarrhea in children under five years. It causes death by depleting body fluids resulting in profound dehydration. Most diarrheal germs are spread from the stool of one person to the mouth of another. These germs are usually spread through contaminated water, food or objects (CDC, 2015).

Children who die from diarrhea often suffer from underlying malnutrition, which makes them more vulnerable to diarrhea. Each diarrheal episode, in turn makes their malnutrition even worse. Diarrhea is a leading cause of malnutrition in children under five years of age. (WHO, 2015)

1.2 PROBLEM STATEMENT

Globally, Diarrhea has remained a public health problem, but especially in conditions of poor environmental sanitation, inadequate water supplies, poverty and limited education (Boschi *et al*, 2008) and it is still the second leading cause of killer of the children worldwide next to pneumonia (Nguyen, 2015). The burden is disproportionately high among children in low- and middle-income countries (Walker, 2012). Most diarrheal deaths are preventable using simple, low-cost interventions CDC. \$1 invested in diarrhea prevention each year (CDC 2015).

The government of Uganda has put forward Strategies including; promotion of breast-feeding, oral rehydration therapy the hand wash campaign and other specific health education aiming to improve the quality of life and reduce the burdens caused by diseases. Despite this fact, diarrheal still ranks second in the list of the leading causes of morbidity and mortality in children and adults as well.

Many studies have pointed out risk factors to diarrhea in other regions for example, poor hygiene, poor weaning practices among others but no publications have been made to explain the risk factors to diarrhea specifically in the age group of the under-fives. In line with this fact, this study has been proposed to determine the risk factors associated with diarrhea in children leaving in Kalungu Sub County.

1.3 STUDY OBJECTIVES

1.3.1 BROAD OBJECTIVES

Factors associated with Diarrhea among children less than five years in Kalungu Sub county Kalungu District

1.3.2 SPECIFIC OBJECTIVES

1. To Assess the Hygienic practices associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district
2. To Asses hygienic practices, sanitation and water related factors associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district
3. To assess water and food related factors associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district

1.4 RESEARCH QUESTIONS

1. What are the hygienic practices associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district
2. What are the sanitation factors associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district
3. What are the water and food related factors associated with Diarrhea among children less than five years in Kalungu sub county Kalungu district.

1.5 SIGNIFICANCE OF THE STUDY

1.5.1 TO ACADEMICS

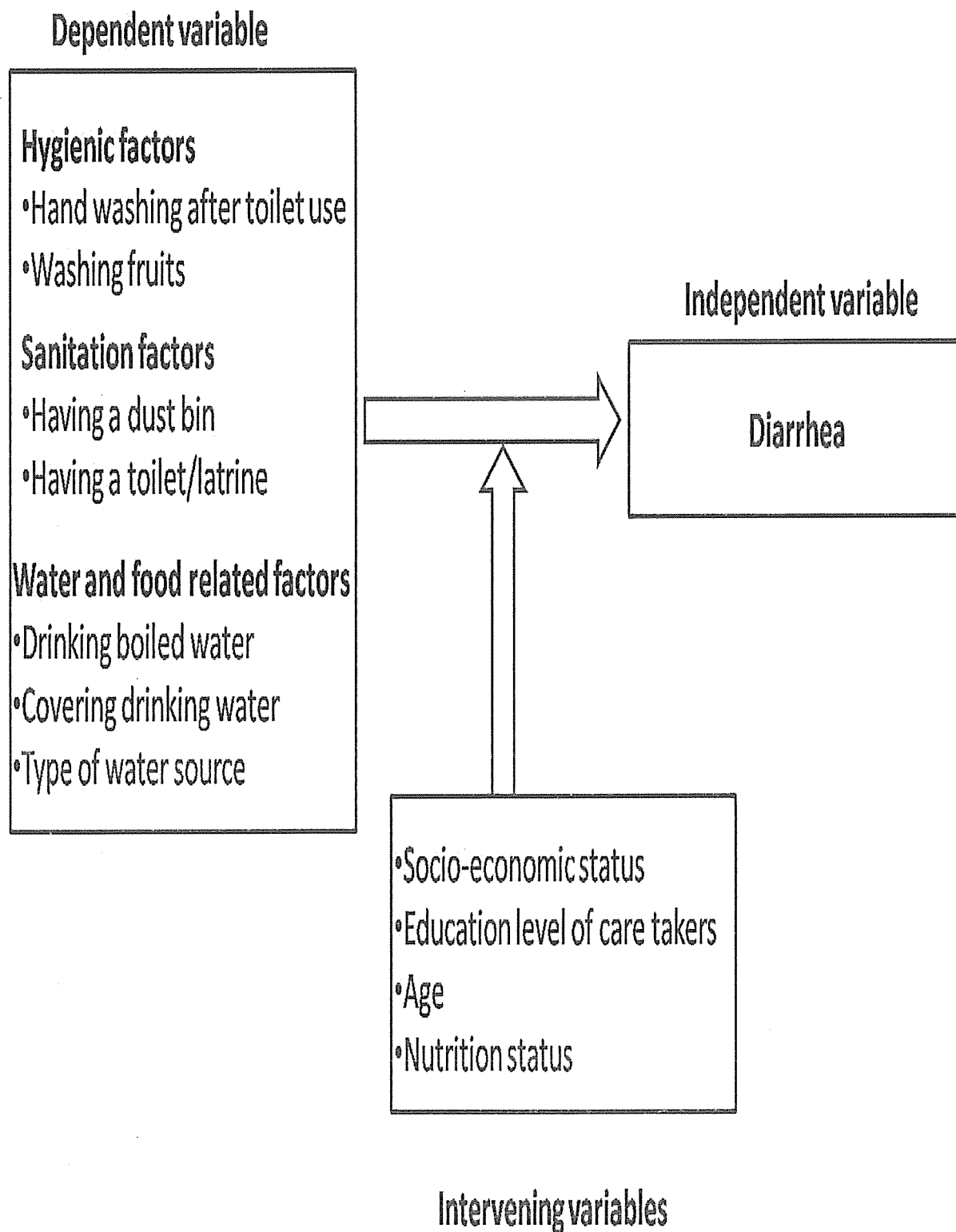
This report on childhood diarrhea is intended to provide an overview of the current state of this problem and to highlight key areas for future research.

1.5.2 TO THE COMMUNITY

The study results will help to improve awareness about the burden and impact of diarrhea and improve the understanding of the associated factors and how the disease can be prevented.

Results would also aid the planning and implementation of preventive strategies of the deadly diarrhea.

1.6 CONCEPTUAL FRAME WORK



1.7 SCOPE OF THE STUDY

1.7.1 TIME SCOPE

This study was conducted between May and July 2017.

1.7.2 GEOGRAPHICAL SCOPE

This study was conducted in homesteads of Kalungu Sub County, Kalungu district. The participants of the study will be mothers and care takers of children less than five years in these homesteads.

1.7.3 CONTENT SCOPE

This study describes risk factors of diarrhea among children less than five years of age who live in Kalungu sub parish, Kalungu district.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presents literatures written by other researchers and scholars about the topic, including hygienic practices, sanitation factors, water and food related factors.

2.1 HYGIENIC PRACTICES PREDISPOSING CHILDREN UNDER FIVE YEARS OF AGE TO DIARRHEA.

Most of the pathogenic organisms that cause diarrhea and all the pathogens that are known to be the major causes of diarrhea are transmitted primarily or exclusively by the fecal–oral route (Moses *et al* 2010). Children with hand washing habits after latrine usage have lower chances of diarrhea than children without hand washing habits, it is clear that hand washing reduces the transmission of pathogens causing diarrhea (Alelign, 2016)

In a certain study, Children whose mother didn't practice hand washing at critical times were 2.21 times more likely to concede diarrhea than children whose mothers practiced hand washing at critical time (Teklemicheal *et al*, 2014). And another study showed that hygienic practices among the mothers/caregivers of children with diarrhea was really poor (Elizabeth *et al*, 2014).

Certain studies show that children who do not wash their hands before meals and after defecation, mothers not washing hands before feeding children or preparing foods, eating of cold left over's, dirty feeding bottles and utensils, un hygienic domestic places (kitchen, living room, yard), unsafe food storage, presence of animals inside the house, were associated with risk of diarrhea morbidity in children (Curtis, 2000)

Having no latrine in the home is not associated with diarrhea, but unavailability of water for washing the anus and hands in those houses which have latrines is significantly associated with diarrhea (Knight *et al*, 2014).

2.2 HYGIENIC PRACTICES, SANITATION AND WATER RELATED FACTORS ASSOCIATED WITH DIARRHEA AMONG CHILDREN UNDER FIVE YEARS

Some sanitation factors, like indiscriminate or improper disposal of children's stool and house hold garbage, no existence of latrine or unhygienic toilet, sharing of latrine, house without sewage system increase the risk of diarrhea in children (Brooks, 2003).

Children who live in poor environment and whose families get water from unprotected sources are more likely to get sick and thus suffer from diarrhea (Karani, 2011). The open disposal of waste around the house is an independent risk factor of diarrhea. (Kedir, 2015). The simple explanation might be that inappropriate disposal of waste provides breeding sites for insects, which carry diarrhea pathogens from waste to water and food (Godana, *et al*, 2013). Inadequate sanitation factors such as drainage near/ around the house and breeding places for flies/insects near the house increases the risk of diarrhea among children less than five years (Elizabeth *et al* 2014)

There is a high case of diarrheal diseases in children from households where there were feces around the pit-hole (Alelign, 2016). This is in agreement with the study in Egypt where there was a strong association between the presence of feces in the yard and non-flush toilets with under-five childhood diarrhea morbidity (Alelign 2016). The mere presence of latrine facility does not have great contribution for prevention of excreta-related disease, but its proper utilization that had a vital importance (Alelign, 2016). A study revealed that the children whose families practiced improper refuse disposal were 3.19 times more likely to concede diarrhea than children whose families practiced proper refuse disposal (Elizabeth *et al* 2014).

In addition, ages of children between 3 and 5 are significantly associated with diarrhea than lower age groups, this could be related to their more environmental exposure and unsafe child feces disposal methods (poor hygienic practices) associated with increased risk of diarrhea. (Alelign, 2016).

2.3 WATER AND FOOD RELATED FACTORS ASSOCIATED WITH DIARRHEA AMONG CHILDREN UNDER FIVE YEARS

A certain study revealed that poor drinking water handling and storage within household, hand washing without soap before food preparation and after defecation are major risk factors for diarrhea among children less than five years (Elizabeth *et al*, 2014). Poor handling of drinking water is significantly associated with increased risk of childhood diarrhea. (Oloruntoba, 2014).

Suboptimal infant and young child feeding practices are a major contributor to child morbidity and mortality (WHO)

The knowledge of mothers and care givers on child nutrition and proper food hygiene and handling methods is very important in alleviating diarrhea, food may be available but cannot be well prepared or hygienically given to the child. Failure to exclusively breastfeed young infants to 6 months and the introduction of liquids and solid foods at the early age of life increases the risk of diarrhea and are important cause of infant and young child morbidity and mortality in Africa (Shikur, 2014) The age at which the children started complementary feeding (weaning) is significantly associated with prevalence of diarrhea in them (Shivali et al, 2015).

There is a peak prevalence of diarrhea at the age of 6-11 months which can be explained by the introduction of contaminated weaning foods (Bezatu *et al*, 2013). In addition, crawling starts at this age and the risk of ingesting contaminated materials may cause diarrhea (Kedir, 2015). Diarrhea is more common in children with malnutrition (Lakshminarayanan *et al*, 2015)

CHAPTER THREE

STUDY METHODOLOGY

3.0 GENERAL INTRODUCTION

In this chapter a description of the method and procedure that was employed in conducting this study. The chapter includes; the study design, area of study population, sample size determination, sampling procedure, data collection procedure, management and analysis, instruments, inclusion criteria, ethical considerations, limitations to the study and dissemination of results.

3.1.0 STUDY DESIGN

This study was a cross sectional study to determine the risk factors of diarrhea among children under five years in Kalungu sub county, Kalungu district. This design enabled the researcher to review the factors predisposing children under five years in Kalungu sub county to diarrhea with the help of the questionnaire.

3.2.0 STUDY AREA

This study was carried out in Kalungu Sub County, Kalungu district. The area was selected because of the high prevalence of diarrhea among children under five years, and it being a new district, it lacked information to explain this.

Kalungu district is bordered by Gomba District to the north, Butambala District to the north east, Mpigi District to the east, Masaka District to the south and Bukomansimbi District to the west.

Kalungu is 21 kilometers (13mi), by road, north east of the city of Masaka, the largest metropolitan area in the sub-region. In 1991, the national census estimated the district population at 152,030. The 2002 national census put the population census to approximately 160,700. As of July 2012, the population was estimated at 177,200.

It's mainly inhabited by Baganda. It has a tropical type of climate with rain season in January, April, May, June, September, October, November and half of December. Dry season is in February, July and August. The soils are fertile for food crops like Matooke, Beans, Maize, Tea, Coffee, Cotton are main cash crops for the District.

3.3 STUDY POPULATION

The study population consisted of all children below five years and their care takers in Kalungu Sub County. These generations were describing the factors associated with the development of diarrhea.

3.4 SAMPLE SIZE DETERMINATION

The sample size was determined by fisher's formula (1962)

$$n = \frac{z^2 pq}{d^2}$$

Equation 1: Fisher's Formula

Where:

z = confidence interval

P= proportion of staff involved in child care (treating pneumonia) estimated at the standard i.e.

0.5

q= 1-p

d= degree of error = 12% (0.12)

So when substituted in the above formula

$$n = \frac{1.96 * 1.96 * 0.5 * 0.5}{0.12^2}$$

n= 76

3.5 SAMPLING METHOD

Simple random sampling method was used for qualitative data collection. To reduce bias, the number of mothers of children under five-year present in Kalungu subcounty was elicited. Those who randomly picked “yes” were given questionnaires to fill. The ones who picked “no” were

not eligible participant and when the sample size was not realized, this was replaced by another round of picking assigned “yes” or “no” by those who were not selected in the first round.

3.6 INCLUSION CRITERIA

Mothers and caretakers, with children aged below five and these children have had a diarrheal attack in the past 6 month's years in Kalungu Sub County, Kalungu district

3.7 EXCLUSION CRITERIA.

All mothers who declined to participate in the study.

3.8 RESEARCH INSTRUMENTS

Data collection tool with structured questionnaire was used to collect data from the respondents at the clinic. The questionnaire was printed in English but will be interpreted for mothers during the process of data collection.

3.9 DATA COLLECTION PROCEDURE

Data will be collected by conducting in-depth interview with the mothers available at the homes during the time of data collection. Data will be collected between 10:00am and 4:00pm, every day from Monday to Friday only for two weeks.

3.10 DATA MANAGEMENT

Data obtained will be kept in safe custody and treated with respected and confidentiality and then analysis will be done at the end of every working day to ensure adequacy, competence, and correctness of information collected.

3.11 DATA ANALYSIS AND PRESENTATION PLAN

Data will be analyzed electronically using Statistical Product for Social Scientists (SPSS) version 17 In SPSS and excel 2010. The major risk factors will be determined by comparing the groups among mothers whose children developed diarrhea within the last 1month

Editing will involve manual checking for errors and omission in the filled tools to ensure consistency, completeness, validity, relevancy and accuracy of data collected. The analyzed information will be presented as frequency distribution tables, graphs, and pie-charts.

3.12 ETHICAL CONSIDERATIONS

A letter of introduction was be sought from the dean of allied health sciences, after submitting the research proposal to the School. The researcher then introduced himself to the leaders of the place for permission.

All the records collected were treated with confidentiality through coding to avoid revealing of personal individual information.

Consent from the respondents was also be considered

CHAPTER FOUR

RESULTS

4.0 INTRODUCTION

In this chapter the researcher has presented the results of the data collected in terms of tables. The data is in correspondence with specific objectives which included, identifying demographic characteristics of respondents, and assessing the factors associated with diarrhea among children under five years in Kalungu Sub county Kalungu district.

4.1 SOCIAL DEMOGRAPHIC CHARACTERISTIC OF STUDY POPULATION

From the study conducted, 76 children who had had a diarrhea attack in the past 6 months were assessed, out of the 76 children, 40(52%) were males and 36(47.4%) were females.

Considering Age 20(26%) were between 2-11 months, 21(27%) were between 1-2 years 35(46%) were between 3-5 years.

Considering Education Levels 50(65.7%) were attending Post Primary, and 26(34.3%) were of a none school going age.

Considering care takers who took part in the study, and starting with their age in relation to the number of diarrhea cases, 20(26.4%) cases were identified in children whose care takers were 10-20 years, 16(21%) were identified in children whose care takers were 21-50 years, 40(52.6%) were identified in children whose care takers were 51 years and above.

Considering Sex of care takers, 10(13.2%) were identified in children with male care takers, 66(86.8) were identified in children female care takers.

Considering the Occupation of the care takers, 13(17.1%) were identified in children whose care takers were social workers, 15(19.7%) cases were identified in children whose care takers were farmers, 35(46.1%) were identified in children whose care takers were un employed, and 13(17.1) were identified in children whose care takers had other jobs.

Concerning their education levels of care takers in relation to number of diarrheal cases, 3(4%) cases were identified in children whose care takers had attained tertiary level, 15(19.7%) cases were identified in children whose care takers had attained secondary level of education, 40(52.6%) cases were identified in children whose care takers had attained primary level, 18(23.7%) cases were identified in children whose care takers never went to school.

Table 4.1 represents a summary of the social demographic characteristics of the children below 5 years and their care takers who participated in the study.

Variables N=76		Number of cases	Percentage number of cases (%)
Sex of the child	Male	40	52.6
	Female	36	47.4
Age of child	2-11 months	20	26
	1-2 years	21	27
	3-5 years	35	46
Education level of child	Post Primary	50	65.7
	None school going	26	34.3
Age of caretaker	10-20 years	20	26.4
	21-50 years	16	21
	51 years and above	40	52.6
Sex Of The caretaker	Male	10	13.2
	Female	66	86.8
Occupation Of The caretaker	Social worker	13	17.1
	Farmer	15	19.7
	Unemployed	35	46.1
	Other	13	17.1
Education level of caretaker	Tertiary	3	4
	Secondary	15	19.7
	Primary	40	52.6
	None	18	23.7

4.2 HYGIENIC PRACTICES PREDISPOSING CHILDREN UNDER FIVE YEARS OF AGE TO DIARRHEA

In this study, 26(34.2%) diarrhea cases were identified in children who lived in homes with plate stands, 50(65.8%) cases were identified in children whose homes had no plate stands. Only 36(47.3%) cases were identified in children whose care takers could wash their hands before preparing their food while 40 (52.7%) cases were identified in children whose care takers could not wash hands before preparing food for them.

37(48.7%) cases were identified in children whose care takers used soap for washing their hands before preparing their food, while 39(51.3%) cases were identified in children who could not use soap to wash their hands with soap before preparing food for them.

Considering the hygiene of children, 10(13.3%) cases were identified in children who could wash their hands after using the toilet, 36(47.3%) cases were identified in children who could not wash their hands after using the toilet, and 30(39.4) cases were in very young children who could not be assessed for hand washing.

Table 4.2 represents the number and percentages of diarrhea cases in relation to Hygienic practices predisposing children under five years to diarrhea.

Variable N=76		Diarrhea cases	Percent age
Plate stand	Available	26	34.2
	Not available	50	65.8
Caretaker washing your hands before preparing food for the child	Yes	36	47.3
	No	40	52.7
Caretaker washing your hands using soap before preparing food for the child	Yes	37	48.7
	No	39	51.3
child washing hands after using	Yes	10	13.3

the toilet	No	36	47.3
	Not Applicable	30	39.4
child washing hands before eating	Yes	15	19.6
	No	31	40
	Not Applicable	30	39.4
child washing fruits before eating them	Yes	21	27.6
	No	25	32
	Not Applicable	30	39.4

4.3 HYGIENIC PRACTICES, SANITATION AND WATER RELATED FACTORS ASSOCIATED WITH DIARRHEA AMONG CHILDREN UNDER FIVE YEARS

Concerning sanitation factors in relation to diarrhea cases, 70(93%) were identified in children who lived in homes with a toilet facility, and 6(8%) cases were identified in children whose home had no toilet.

Considering ownership of the toilet facility, 31(40.7%) cases were identified in children who privately owned toilet facilities and 45(59.3%) cases were identified in children whose homes shared the toilet facility with other people.

Considering the type of the toilet structure, 45(59.3%) cases were identified in children whose homes owned a VIP toilet structure while 36(47.4%) cases were identified in children whose homes owned an ordinary pit latrine.

Considering modes of refuse disposal, 30(39%) cases were identified in children who lived in homes with proper refuse disposal while 47(61%) cases were found in children who lived in homes with improper refuse disposal.

Table 4.3 represents the number and percentages of diarrhea cases in relation to sanitation factors predisposing children under five years to diarrhea.

Variable N=76		Diarrhea cases	Percent age
Toilet facility	Available	70	93
	Not available	6	8
Ownership of toilet facility	Privately owned	31	40.7
	Shared with neighbors	45	59.3
Type of toilet facility	VIP	40	52.6
	Pit latrine	36	47.4
Refuse disposal	Proper	30	39
	Improper	47	61.

4.4 WATER AND FOOD RELATED FACTORS PREDISPOSING CHILDREN UNDER FIVE YEARS OF AGE TO DIARRHEA

Considering the Distance of home steads from the water sources, 20(26.4%) cases were identified in children whose homes were Very close to water sources, 21(27.6%) cases were identified in children whose homes were less than 1 km from the water sources and 35(46%) cases were identified in children whose homes were more than 1 km from their water sources.

Considering the type of water source, 15(19.3%) cases were identified in children whose families used water from Taps, 18(23.4%) cases were identified in children whose families used water drawn from protected springs and 43 (56.4%) cases were identified in children whose families

used water drawn from unprotected wells. Concerning the equipment used to draw water, 73(94%) cases were identified in children whose family collected water using Jerry cans While 3(6%) cases were identified in children whose families collected water using other equipment.

Considering storage of drinking water, 30(39%) cases were identified in children whose families kept their drinking water in jerry cans while, cases 47(61%). were Identified in children whose families stored drinking water in other equipment.

Considering the frequency of washing the storage equipment, 10(13.25) were Identified in children whose family washed their storage equipment on a daily basis, 26 (34.2%) cases were identified in children whose families washed their storage equipment weekly, and 40(52.6%) cases were identified in children whose families washed their storage equipment after a month.

Concerning the mode of water treatment, 20 (26.4%) cases were identified in children whose families treated water by boiling, 4(5.2%) cases were identified in children whose families treated their water by chlorination, and 52(68.4%) cases were identified in children whose families dint treat water in anyway.

Table 4.4 represents the number and percentages of diarrhea cases in relation to food and water related factors predisposing children under 5 to diarrhea.

Variable N=76		Diarrhea cases	Percent age
Distance from home to the water source	Very close to home	20	26.4
	Less than 1km	21	27.6
	More than 1km	35	46
Type of the water source	Tap	15	19.3
	Protected spring	18	23.4
	Unprotected Well	43	56.4

Equipment used to draw water	Jerri can	73	94
	other	3	6
Equipment used to store water	Jerri can	30	39
	Other	47	61.
Frequency of washing your storage equipment	Daily	10	13.2
	Weekly	26	34.2
	Month	40	52.6
Method of water treatment	Boiling	20	26.4
	Chlorination(Aqua safe)	4	5.2
	None	52	68.4

CHAPTER FIVE

INTRODUCTION:

This chapter shows the discussion of results obtained from the study based on the stated objectives.

5.1 THE SOCIAL DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS.

From the study conducted, 76 children who had had a diarrhea attack in the past 6 months were assessed, out of the 76 children, 40(52%) were males and 36(47.4%) were females however there was no clear reason to explain this difference.

Considering their age 20(26%) were between 2-11 months, 21(27%) were between 1-2 years 35(46%) were between 3-5 years. This showed that ages of children between 3 and 5 are significantly associated with diarrhea than lower age groups, this is related to their more environmental exposure and unsafe child feces disposal methods (poor hygienic practices) associated with increased risk of diarrhea. These results are in agreement with the results from the study made by Alelign, 2016.

Considering Education Levels 50(65.7%) were attending Post Primary, and 26(34.3%) were of none school going age. According to these results, diarrheal cases were more in children of school going age than in those of the non-school going age, this can be attributed to the fact that children of the school going age have more exposure to the environment and thus more exposed to germs from where they play from what they eat at school and among others.

Considering care takers who took part in the study, there was a vivid relationship between age of care taker and a chance to acquire diarrhea, In young care takers between 10-20 years, diarrhea cases were more than that is 20(26.4%), this can be attributed to carelessness and negligence in this age group, 16(21%) cases were in children whose care takers were 21-50 years this is a little less compared to the number of cases in young care takers, this can be explained in such a way that as age increases people become more care full and responsible 40(52.6%) cases in children whose care takers were 51 years and above, though responsibility increases with age, old people tend to become weak and may not be able to accomplish the diarrhea preventive measures.

Considering Sex of care takers, 10(13.2%) were identified in children with male care takers, 66(86.8%) were identified in children female care takers. In this study, it was found majority of the care takers were of a female sex, sex of a care taker therefore, may not be a significant criteria in assessing factors that predispose children below years to diarrhea.

Considering the Occupation of the care takers, 13(17.1%) were identified in children whose care takers were social workers, the number of cases in this group was significantly low, the explanation can be that most social workers have attained a significant level of education and are informed about what to do to prevent diarrhea. Number of identified cases was higher in children who had farmers as care takers than in social workers and the reason may be that farmers are less informed compared to social workers. 35(46.1%) were identified in children whose care takers were unemployed, this big rise can be explained by the fact that unemployed people don't have enough money to buy appropriate and safe food for their children ,their financial constraints also indirectly affect their hygiene and thus more diarrhea cases. 13(17.1%) were identified in children whose care takers had other jobs, these values are lower than the values in the unemployed, justifying the fact that if you have a source of income, you will obtain what is good for your children to feed on and even have an improved hygienic status.

Concerning their education levels of care takers in relation to number of diarrheal cases, 3(4%) cases were identified in children whose care takers had attained tertiary level, 15(19.7%) cases were identified in children whose care takers had attained secondary level of education, 40(52.6%) cases were identified in children whose care takers had attained primary level, 18(23.7%) cases were identified in children whose care takers never went to school.

These results show that the higher the education level of care takers, the lower the occurrence of diarrhea. This is because the more a person is educated, the more he/ she gets informed and aware of hygiene and sanitation and which practices can prevent diarrhea.

5.2 THE NUMBER AND PERCENTAGES OF DIARRHEA CASES IN RELATION TO HYGIENIC PRACTICES PREDISPOSING CHILDREN UNDER FIVE YEARS TO DIARRHEA

In this study, plate stands were found to be an indirect factor in the occurrence of diarrhea 26(34.2%) diarrhea cases were identified in children who lived in homes with plate stands, 50(65.8%) cases were identified in children whose homes had no plate stands. Plate stand play a role in hygiene and therefore this explains the increased number of cases in homes without them.

Only 36(47.3%) cases were identified in children whose care takers could wash their hands before preparing their food while more cases 40(52.7%) cases were identified in children whose care takers could not wash hands before preparing food for them. These results were in agreement with those in a certain study which showed that children whose mothers didn't practice hand washing at critical times were 2.21 times more likely to concede diarrhea than children whose mothers practiced hand washing at critical time (Teklemicheal *et al*, 2014)

37(48.7%) cases were identified in children whose care takers used soap for washing their hands before preparing their food, while 39(51.3%) cases were identified in children who could not use soap to wash their hands with soap before preparing food for them. This show that merely washing hands may not completely prevent diarrhea, hands should be washed with soap.

Considering the hygiene of children, 10(13.3%) cases were identified in children who could wash their hands after using the toilet, 36(47.3%) cases were identified in children who could not wash their hands after using the toilet, and 30(39.4) cases were in very young children who could not be assessed for hand washing. This shows that there is a direct relationship between hand washing and occurrence of diarrhea. This is in concurrence with a certain studies show that children who do not wash their hands before meals and after defecation were associated with risk of diarrhea morbidity in children (Curtis, 2000)

Table 5.3 represents the number and percentages of diarrhea cases in relation to sanitation factors predisposing children under five.

Concerning sanitation factors in relation to diarrhea cases, 70(93%) were identified in children who lived in homes with a toilet facility, and 6(8%) cases were identified in children whose home had no toilet. A toilet facility improves hygienic and hygienic standards which both play a role in occurrence of diarrhea as it was found out by Brooks, 2003. However in this study, it was identified that the number of homes which dint have toilets were very low and therefore this factor seemed insignificant in the study.

Ownership of the toilet facility however seemed to play a significant part in occurrence of diarrhea , 31(40.7%) cases were identified in children who privately owned toilet facilities and 45(59.3%) cases were identified in children whose homes shared the toilet facility with other people. This showed that maintenance of hygiene in shared toilets is hard, Brooks, 2013 asserted that un hygienic toilets increase the risk of diarrhea in children. This explains a high occurrence of diarrhea in children whose homes shared

Considering the type of the toilet structure, 45(59.3%) cases were identified in children whose homes owned a VIP toilet structure while 36(47.4%) cases were identified in children whose homes owned an ordinary pit latrine. This goes back to hygienic conditions of the toilet facility, VIP toilets were found to be more hygienic and this explains the lower occurrence of diarrhea in homes that have VIP latrines compared to ordinary pit latrines.

Considering modes of refuse disposal, lesser cases 30(39%) cases were identified in children who lived in homes with proper refuse disposal while 47(61%) cases were found in children who lived in homes with improper refuse disposal. This was in agreement with a study which revealed that the children whose families practiced improper refuse disposal were 3.19 times more likely to concede diarrhea than children whose families practiced proper refuse disposal (Elizabeth *et al* 2014).

5.4 THE NUMBER AND PERCENTAGES OF DIARRHEA CASES IN RELATION TO FOOD AND WATER RELATED FACTORS PREDISPOSING CHILDREN UNDER 5 TO DIARRHEA.

Considering the Distance of home steads from the water sources, 20(26.4%) cases were identified in children whose homes were Very close to water sources, 21(27.6%) cases were identified in children whose homes were less than 1 km from the water sources and 35(46%) cases were identified in children whose homes were more than 1 km from their water sources. The explanation for these results is that families who get their water from far tend to have inadequate water at most times yet water is essential in maintenance of sanitation and hygiene and thus more occurrence in these home than in homes whose water sources are close.

Considering the type of water source, 15(19.3%) cases were identified in children whose families used water from Taps, 18(23.4%) cases were identified in children whose families used water drawn from protected springs and 43 (56.4%) cases were identified in children whose families used water drawn from unprotected wells. This may be due to water safety, Water from taps seemed to be safer than water from other sources and therefore there were fewer occurrences in homes who use water from taps.

The equipment used to draw water also seemed to be of less relevance in this study because most of the homes used jerry can to collect water,

Similary, equipment used for storage of drinking water was no relevant as a factor to this study because majority of home steads reported to be keeping their water in small Jerri cans, 30(39%) cases were identified in children whose families kept their drinking water in jerry cans while, cases 47(61%). were Identified in children whose families stored drinking water in other equipment.

Considering the frequency of washing the storage equipment, 10(13.25) were Identified in children whose family washed their storage equipment on a daily basis, 26 (34.2%) cases were identified in children whose families washed their storage equipment weekly, and 40(52.6%) cases were identified in children whose families washed their storage equipment after a month.

Mode of water treatment however seemed an important factor, 20 (26.4%) cases were identified in children whose families treated water by boiling, 4(5.2%) cases were identified in children

whose families treated their water by chlorination, and 52(68.4%) cases were identified in children whose families did not treat water in any way. Homes which did not treat their water at all had a higher occurrence of diarrhea, those that treated by boiling had less than that. Homes that treat their water by chlorination were few in numbers, this showed that chlorination is not a common practice.

5.5 CONCLUSION

Hygienic practices were found to still be poor among the region and this was responsible for the increasing incidence of the disease in the region. Care takers did not bother washing their own hands or even advising their children to wash hands before eating and after use of toilet. Other hygienic practices were still neglected.

Poor sanitation was found to still be a major predisposing factor to diarrhea among this age, homes that had no toilets, poorly disposed waste and had unhygienic toilet facilities had more occurrence of diarrhea.

Water and food related factors were also very significant in this study, Longer distances from water sources increased the chances of having diarrhea, type of water source was also important as people who collected water from safe sources had less occurrence of diarrhea than those who collected water from unsafe sources.

5.6 RECOMMENDATIONS

- Health education about the causes of diarrhea and preventive measures should be intensified by the government. More health educators should be trained to increase the manpower and to cover a wider area.
- Government should encourage and facilitate researchers to dig up more about the matter as research is the foundation of awareness creation among people.
- Concerning Water, Government should improve the water system, it should bring water close to people and improve its quality and quantity
- Government should provide quicker and more convenient modes of water treatment, for example by providing treatment tablets (Aqua safe) to make water safer for use

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APPENDICES

Appendix 1(Data Collection tool)

PART 1 BIODATA

	NAME	AGE	SEX	OCCUPATION	EDUCATION
CHILD					
CARE TAKER					

PART 2 HYGENIC FACTORS

1. Do you have a plate stand? Yes ☐ No ☐
2. Do you wash your hands before preparing food for the child Yes ☐ No ☐
3. (if yes in 2 above) Do you use soap? Yes ☐ No ☐
4. Does the child was hands after using the toilet? Yes ☐ No ☐
5. Does the child was ands before eating? Yes ☐ No ☐
6. Does the child was fruits before eating them? Yes ☐ No ☐

PART 3 SANITATION FACTORS

1. Do you have a toilet facility? Yes ☐ No ☐
2. Ownership of the facility. Privately owned ☐ Shared with neighbors ☐
3. Type of facility (specify).....
4. how do you dispose refuse(specify)

PART 4 WATER AND FOOD RELATED FACTORS

1. What is the distance from home to the water source?.....
2. What is the type of the water source?.....
3. What do you use to draw water?.....
4. What do you use to store water?.....
5. how often do you wash your storage equipment

6. How do you make your water safe for drinking?