

**PREVALENCE AND FACTORS ASSOCIATED WITH DIARRHOEAL DISEASES
AMONG CHILDREN UNDER THE AGE OF FIVE YEARS ADMITTED
IN PAEDIATRIC WARD AT JINJA REGIONAL
REFERRAL HOSPITAL IN
EASTERN UGANDA**

BY

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BMS/0026/133/DU

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FOR THE AWARD OF A DEGREE IN BACHELORS OF MEDICINE
AND BACHELORS IN SURGERY**

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DECLARATION

I MWESIGWA KATEREGA JOSHUA hereby declare to the best of my knowledge, that this dissertation is my original work and has not been presented or submitted for any award or degree at Kampala International University, western campus or any other institution in the country.

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DEDICATION.

I dedicate this research work to my dear parents: Pr. Muyinda Burpson Samuel and Mrs. Muyinda Justine Nakakawa, and to my beloved brothers and sister; Mr. Muyinda Ivan Ssegawa, Mr. Lubuulwa Joel Mwesigwa and Mrs. Okoth Grace Nalwadda, for their patience, help and during my undergraduate programme in bachelors of medicine and surgery.

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LIST OF ABBREVIATIONS.

AIDS:	Acquired Immunodeficiency Syndrome.
HC:	Health Centre.
JRRH:	Jinja Regional Referral Hospital.
KIU, WC:	Kampala International University, Western Campus.
MOH:	Ministry Of Health.
UNICEF:	United Nations International Children's Emergency Fund.
VHT:	Village Health Team.
WHO:	World Health Organization.

KEY DEFINITIONS.

DIARRHOEA: Is defined as having loose or watery stools at least three times per day, or more frequently than normal for an individual. (UNICEF/WHO, 2009).

INFECTION: It is the entry and development or multiplication or both of an infectious agent in the body of a susceptible host.

SANITATION: Is the hygienic means of promoting health and prevention of human contact with the hazards as well as the treatment of the proper disposal of sewage or waste water.

HYGIENIC: It's the principle of maintaining cleanliness and grooming of the external body.

HEALTH: Is a state of complete physical, social, mental, psychological and financial wellbeing of an individual and not merely absence of disease.

DISEASE: Is an inadvertent product of an infection or the disruption of the normal functioning of the body due to excess or lack or one or more of the physiological requirements of the body.

MORBIDITY: Is the disease state, or poor health due to any cause.

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ABSTRACT.

Background.

Diarrheal diseases are the leading cause of child mortality and morbidity in the world. In sub-Saharan Africa, diarrheal disease is not just a health issue, but an economic one as well, in Uganda; diarrhea is among the top four causes of mortality in infants and young children.

Objective.

The aim of this study was to determine the prevalence and factors associated with diarrhoeal disease among children under the age of five years admitted in paediatric ward at Jinja regional referral hospital in eastern Uganda.

Methodology.

A hospital based cross-sectional study was carried out in Jinja Regional Referral Hospital, in eastern Uganda in the month of July 2018. A total of 276 children under the age of five years were recruited into the study. Data were collected by a pre-tested questionnaire. Data were collected through the questionnaires and analyzed using tables, charts and graphs.

Results.

A total of two hundred seventy six children participated in the study, with a response rate of 276 (100%). From the 276 children who participated, 52 had diarrheal diseases thus giving a prevalence of 18.8%.

The prevalence of diarrhea was significantly high among children aged 25-59 months with (84.7%), residence in rural area (88.5%), not having been vaccinated for Rota virus (100%), and having more than 2 siblings under the age of five years (92.3%) it was also significantly high when the parent/guardian was 16-24 years (53.8%), primary education level (96.2%), being a peasant farmer (98.1%) and having a net monthly income of between 10,000-50,000 ug shs (84.6%). Open surrounding and burial disposal of the children's fecal matter, not regularly cleaning the toilets/latrines facilities, open surrounding/garden disposal of household garbage and waste water, no soap use and no hand washing, not regularly cleaning the water storage containers were associated with higher risks for developing diarrhea.

Conclusion.

In this study, the prevalence of diarrhoea among under -five children was 18.8%. Appropriate sanitation and personal hygiene promotion programs should be implemented to prevent diarrhea in children less than five years old in the study area which can be integrated with the existing ministry of health programs of public health.

CHAPTER ONE

1.0 INTRODUCTION.

1.1 BACKGROUND.

Diarrhea is a world-wide problem that is frequently encountered in the practice of pediatric medicine. Diarrheal diseases are the leading cause of child mortality and morbidity in the world and mostly from contaminated food and water sources where worldwide 780 million individuals lack access to improved drinking water and 2.5 billion lack improved sanitation, (WHO, diarrheal disease fact sheet updated May 2017).

Diarrhea is a leading killer of children accounting for 9% of all deaths among children under age of 5 years worldwide by 2015. This translates to over 1,400 young children dying each day or about 526,000 children a year, despite the availability of simple treatment. (UNICEF, updated February, 2017).

Diarrhea is defined as having loose or watery stools at least three times per day, or more frequently than normal for an individual. (UNICEF/WHO, 2009). However, it is the consistency of the stools rather than the number that is most important.

80% of child deaths is entirely due to diarrhea and occur more commonly among children less than 2 years, where an estimated 1 billion episodes and 2.5 million deaths occur each year among children under the age of five and globally, there are nearly 1.7 billion cases of diarrhea each year, the burden is disproportionately high among children in low and middle income countries, (UNICEF in 2013)

Diarrhea is a common symptom of gastrointestinal infections caused by a wide range of pathogens, including bacteria, viruses and protozoa. Rotavirus is the leading cause of acute diarrhea, and is responsible for about 40% of all hospital admissions due to diarrhea among children under five worldwide, and the rotavirus is responsible for 33% to 45% of the diarrhea cases, (Nakawesi et al., 2010). Others include *Escherichia coli*, *Shigella*, *Campylobacter* and *Salmonella*, along with *Vibrio cholerae* during epidemics.

However much as diarrheal disease is a global killer, it strikes disproportionately those living in developing nations, in that children at greatest risk are those who may be malnourished and lack access to clean water, proper sanitation, and urgent medical care (Diarrheal disease, PATH).

1.2 PROBLEM STATEMENT.

Diarrheal diseases are the leading cause of child mortality and morbidity in the world, and mostly from contaminated food and water sources where worldwide 780 million individuals lack access to improved drinking and 2.5 billion lack improved sanitation, (WHO, diarrheal disease fact sheet updated May 2017). Diarrhea is a leading killer of children accounting for 9% of all deaths among children under age 5 worldwide by 2015. This translates to over 1,400 young children dying each day, or about 526,000 children a year, despite the availability of cost friendly treatment, (UNICEF, updated February 2017).

In sub-Saharan Africa, diarrheal disease is not just a health issue, but an economic one as well, for example, treating water-borne diseases like diarrhea costs governments at least 12% of their total health budget each year, whereas the World Bank estimates that environmental health problems such as diarrhea and associated malnutrition cost low-income governments up to 9% of their annual gross domestic products, (Diarrheal disease, PATH).

In sub-Saharan Africa, a prevalence of 23.8% of diarrhea in children below the age of five years was demonstrated with children less than 2 years most affected in Cameroon. (Ayuk Bertrand Tambe et al, 2015).

Diarrheal morbidity among under-5 children varied considerably across the cohorts of birth from 10% to 35%, across countries in sub-Saharan Africa, with higher incidence in Niger compared to Burkina Faso, Mali, and Nigeria. (Aristide R. Bado et al, 2016).

A higher prevalence of diarrhea of 26% in children under the age of five in Mbour, Senegal with the highest prevalence occurring in the central (36.3%) and peri-central areas (44.8%) raises the need for public health interventions to alleviate the burden of diarrhea among vulnerable groups. (Sokhna Thiam et al, 2014).

In Tanzania the prevalence of diarrhea under-five was 32.7%, with proportion of households that reported treating water with any method being 49.5%. (Remidius KK, 2012).

In Uganda, diarrhea is among the top four causes of mortality in infants and young children, (ministry of health statistical abstract 2010).

In the year 2000, Uganda had the 14th highest number of under-five child deaths (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. At 134 deaths per 1000 live births, Uganda has the worst under-five mortality rate of the three East African countries. Overall prevalence of diarrhoea in children aged 0–5 years was 23.8%. The Northern and Eastern regions of the country had the highest prevalence of diarrhoea in children (29.3% and 26.9% respectively) (Ssenyonga R et al., 2009).

Uganda is the ninth in the whole world among countries with the highest mortality rate due to diarrhea with approximately 29,300 child deaths occurring every year due to the disease. (WHO, Ending Preventable Deaths from Pneumonia and Diarrhea by 2025).

Despite the awareness and proven lifesaving interventions that already exist like; improved sanitation and hygiene, access to safe drinking water, availability of vaccines, exclusive breastfeeding, optimal complementary feeding, and when diarrhea occurs, treatment options such as oral rehydration therapy and zinc treatment that speed recovery and saves lives, diarrhea remains a major cause of death in children under the age of five (Diarrheal disease, PATH).

Though with low research information available, Jinja, has been observed to have an increased prevalence, morbidity and mortality of diarrheal diseases. Thus this study aims to establish the prevalence and factors that influence it of diarrheal diseases in this district.

1.3 PURPOSE OF THE STUDY.

To determine the prevalence and factors associated with diarrheal disease among children under the age of five years admitted in pediatric ward JRRH, in Uganda.

1.4 SPECIFIC OBJECTIVES.

1. To assess the socio-demographic factors associated with diarrheal disease among children under the age of five years admitted in pediatric ward in JRRH, in Uganda.
2. To identify the sanitation and hygiene factors associated with diarrheal disease among children under the age of five years admitted in pediatric ward in JRRH, in Uganda.
3. To establish a relationship between sanitation and diarrhoea prevalence among children under the age of five years admitted in pediatric ward in JRRH, in Uganda.

1.5 RESEARCH QUESTIONS.

1. What is the prevalence of diarrheal disease among children under the age of five years admitted in pediatric ward in JRRH, in Uganda?
2. What are the socio-demographic factors affecting the prevalence of diarrhoea among children under the age of five years admitted in pediatric ward in JRRH, in Uganda?
3. What are the sanitation and hygiene factors affecting the prevalence of diarrhoea among children under the age of five years admitted in pediatric ward in JRRH, in Uganda?

1.6 SIGNIFICANCE/JUSTIFICATION OF THE STUDY.

In the prevention of diarrhea, it is crucial that the prevalence and factors associated with diarrheal disease be identified first in communities through research. Over the world studies have been conducted towards the prevalence and factors associated with diarrheal disease among children less than five years. However, the local epidemiology of diarrhea in most urban and rural areas of Uganda has not been researched thoroughly. Most studies in Uganda have focused on treatment of diarrheal diseases and those that have tried to look at the risk factors and its prevalence have done it at national level and a few different parts of the country like Kabarole, Adjumani district and also some parts of central Uganda including Mulago and Masaka and eastern Uganda in Jinja.

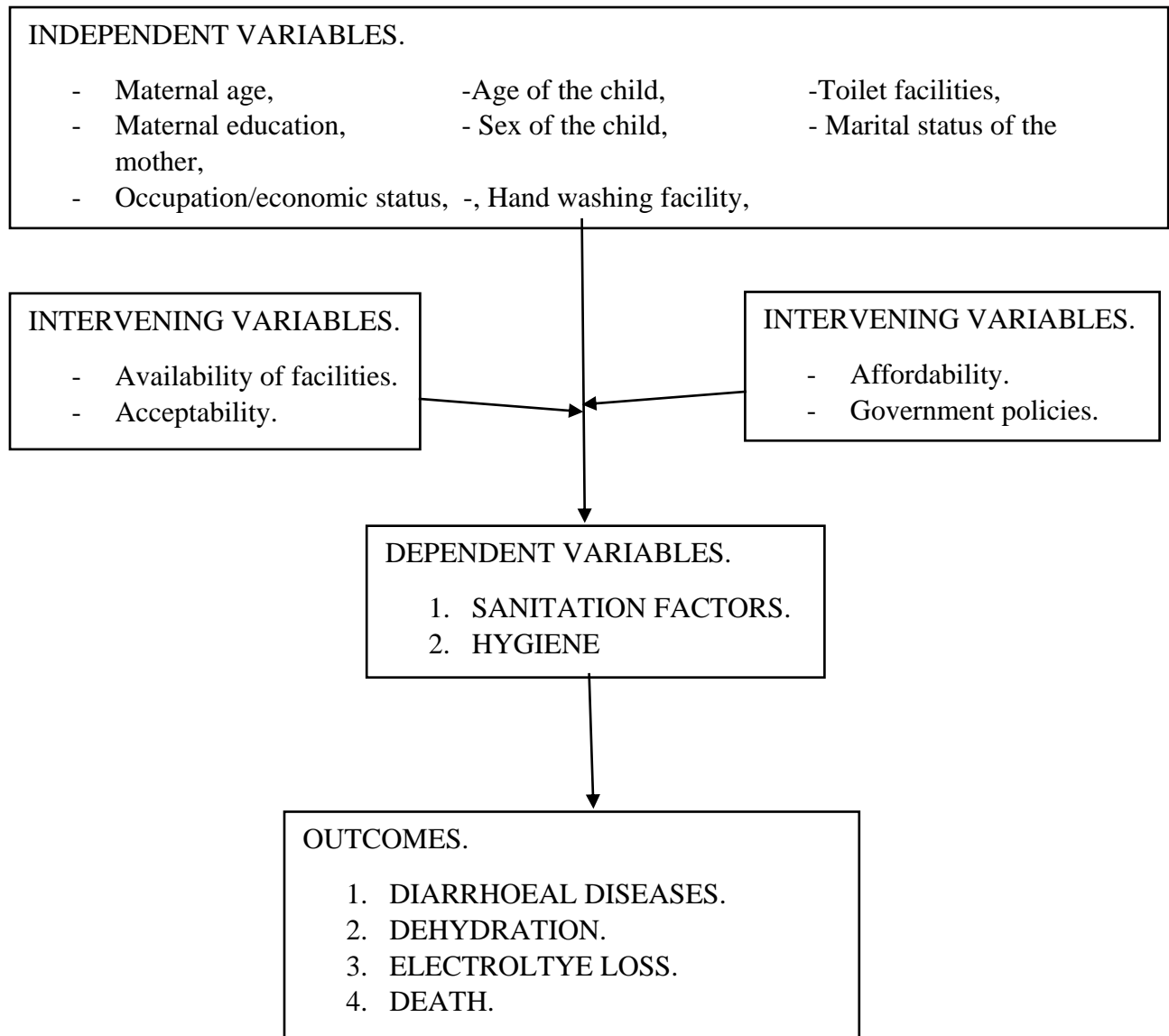
The study will provide an informed assessment of the prevalence and factors associated with diarrhoea in children under the age of five years in JRRH.

This study is going to fill part of the gap present where we are having little literature about diarrheal disease factors in JRRH.

It will also provide a basis for the development and control interventions against diarrhea in Jinja and the country (Uganda) at large.

This study will also establish the relationship between sanitation factors and diarrhea prevalence among children under the age of five years.

1.7 CONCEPTUAL FRAMEWORK.



This conceptual frame work was designed basing on known determinants for children under the age of five years with diarrhea. The model has identified independent, intervening and dependent variables that lead to the outcomes of the diarrheal diseases.

The source of drinking water determines whether it's contaminated or not. Tap water is a safe source, but this might be contaminated due to pipe leakages. Water vendors and kiosks may also contaminate the water. Containers used to carry and store the water are rarely cleaned.

Access to and sharing of toilet facilities and their well maintenance. When not well maintained, they may contribute to acute diarrhea, especially when they and their mothers visit these toilets and fail to wash their hands after and before feeding.

Poor disposal of house hold wastes for-example dumping them in the open environment near the residences, they decompose attracting vectors like houseflies.

Frequent washing of hands during critical times; critical means after visiting toilets, before preparing meals and before feeding the young children.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION.

Today diarrhea remains a major public health problem where an estimated 1 billion episodes and 2.5 million deaths occur each year among children under five years of age and about 80% of deaths due to diarrhea occur in the first two years of life (Aliegn T et al., 2016). Overall, these children experience an average of 3.2 episodes of diarrhea per child per year.

Diarrhea is a world-wide problem that is frequently encountered in the practice of pediatric medicine. Diarrheal diseases are the leading cause of child mortality and morbidity in the world and mostly from contaminated food and water sources where worldwide 780 million individuals lack access to improved drinking water and 2.5 billion lack improved sanitation, (WHO, diarrheal disease fact sheet updated May 2017). Infection is spread through contaminated food or drinking water, or from person to person as a result of poor hygiene and also shortage of adequate sanitation. The diarrheal pathogens share a mode of transmission, and this is known as faecal-oral transmission.

There are three clinical types of childhood diarrhoea;

ACUTE WATERY DIARRHEA; is when the episodes of diarrhea last for less than 14 days. It causes dehydration and contributes to malnutrition. **PERSISTENT DIARRHEA;** is an episode of diarrhea that lasts at least 14 days or more. It often causes nutritional problems that contribute to deaths to children who have diarrhea. **BLOODY DIARRHEA (DYSENTERY)** is diarrhea with blood in stool with or without mucus. The most common cause of dysentery is *Shigella* bacteria. (Integrated management of childhood illness by WHO, 2005).

“The most severe threat posed by diarrhea is dehydration where water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools, vomit, sweat, urine, and breathing. It occurs when the losses are not replaced (WHO, diarrheal disease fact sheet updated May 2017).

2.1 SOCIO-DEMOGRAPHIC FACTORS.

Children whose mothers or guardians had no formal education had a higher incidence of diarrhoea whereby education was important to change the manner of healthcare seeking and practice (Aliegn T et al., 2016). There was a 2.5 higher incidence in children whose mothers had no formal education thus education enhances household health and sanitation practices and also increases awareness about the diarrheal transmission and prevention methods (Wondwoson Woldu et al., 2015). It was revealed that children under the care of mothers/caretakers who had poor-moderate of practice in relation to diarrhea were more likely to develop diarrhea than those with good practice, (Stephen Birungi et al., 2016).

Diarrhea was markedly more in the age groups of ages 3 to 5 years due to exposure to the environment and the unsafe child faecal disposal methods thus increased risk of diarrhoea, (Aliegn T et al., 2016). Also age groups 6 - 11 months and 12 - 23 months were associated with higher incidences compared to those above 35 months attributed to the introduction of contaminated weaning food and crawling that led them to ingest contaminated materials (Bezatu Mengistie et al., 2013). There was 4.8 higher incidence for those aged 6-11 months to have diarrhea than those less than 6 months, due to introduction of weaning foods, those aged 2-5 years had higher risk of exposure due to the considerable independence (Sokhna T et al., 2014). Children aged 6-35 months had a higher incidence of diarrhea than those younger due to conferred protection against diarrhea through maternal antibodies against the enteric pathogens (Siziya S et al., 2013).

Families that had two or more siblings under the age of five years had 1.74 more chance of developing diarrhea than those with one sibling, assumed to be due to the incapability of care to the many children, (Bezatu M et al, 2013). Households with two and three children had a 4.3 and 22.4 diarrhea occurrence respectively compared to those with one child and it is due to the decreased quality of care and attention that the mothers provided thus easy transmissibility of the disease (Wondwoson W et al, 2015). Presence of 2 or more children under the age of five in a single household was contributed to increased diarrhea incidence due to the challenges of taking care of the multiple young children, (Siziya S et al, 2013).

There was a 1.6 times higher incidence of diarrhea in children from economically poor households compared to the counterparts since they can't afford soap for hand washing and aqua-guard at their houses to protect microbial contamination in water and also couldn't afford constructed toilets (Wondwoson W et al., 2015). Mothers that were housewives, their children showed a higher risk of diarrhea compared to those working in the private or public sectors (Sokhna T et al., 2014).

Higher incidence of diarrhoea was demonstrated in children staying in rural areas due to the lack of access to water and sanitation facilities that are more available and accessible in urban areas, (Bezatu M et al., 2013). Overcrowding and living in a rural area was also associated with diarrhoea due to poverty that impacted the level of hygiene, especially in areas where there was a cyclic drought that affected more the vulnerable rural population (Siziya S et al., 2013).

Males were affected more than females (52% and 48%) respectively, (Ali S et al., 2015). Diarrhoea was slightly more among girls compared to boys where it was due to cultural practices; where there is an overt preference for boys over girls thus affects how mothers/caregivers take care of children, (Sokhna T et al., 2014).

Children that were not or incompletely vaccinated were at risk of diarrhea disease since they were susceptible to diseases like measles, whooping cough, and tuberculosis that affected their health thus becoming vulnerable to different diseases including diarrhea (Ali S et al., 2015).

2.2 SANITATION AND HYGIENIC FACTORS.

Many diarrheal diseases in children were seen from households where faeces were found around the pit holes and also proper utilization of the latrines was of vital importance (Aliegn T et al., 2016). A lesser risk of diarrhea was found among subjects that lived in households with a toilet/latrine compared to those who lived in households without one and had open defecation around the homesteads (Stephen Birungi et al., 2016). Sharing of a toilet with other households was positively associated with a higher prevalence of diarrhea (Sokhna T et al., 2014). Improper disposal of faeces may contaminate hands which can contaminate food or other humans (person-to-person transmission) thus diarrheal diseases (A.Prüss-Üstün et al., 2006). Most people with no access to a hygienic toilet have large amounts of faecal waste that are discharged into the environment that are likely to have major impacts on infectious disease burden and quality of life (Elizabeth Omoladun Olorunoba1 et al., 2014). Presence of dirt and faeces on toilet floors and foul smelling toilets are important factors predisposing children to diarrhea (Takanashi et al., 2009).

There was a lower incidence of diarrhoea among children who had hand washing habits after latrine usage than those who didn't, thus it was clear that hand washing reduced the transmission of pathogens causing diarrhoea, (Aliegn T et al., 2016). Children in the households without hand washing facilities had 1.92 times higher odds of having diarrhea compared to children in the households with hand washing facility (Bezatu M et al., 2013). Children who washed hands after latrine visit had a lower incidence of diarrhea compared to counterparts (Stephen B et al, 2016). A higher incidence of diarrhea was seen in families where mothers less often washed their hands before feeding their children (Nguyen et al., 2006). Inadequacy of hand washing facilities related to poor hygiene was associated with higher incidence of diarrhea, (A.Prüss-Üstün et al., 2006). Diarrheal incidence was higher among children whose mothers didn't always wash their hands with soap before feeding them (Takanashi et al., 2009). Children whose mothers didn't practice hand washing at critical time plus those who didn't use soap for hand washing had 2.21 and 7.40 times respectively to concede diarrhea than counterparts (Teklemichael Gebru et al., 2012).

Children in families that practiced improper refuse disposal were 3.19 times more likely to concede diarrhea than those that practiced proper refuse disposal where by poor refuse disposal was attributed to direct contact with human excreta when the child starts to crawl and easily accessible to vectors and rodents (Teklemichael G et al., 2012). Children in households that openly dumped refuse around the house had higher odds of having diarrhea compared to those who used waste disposal pits (Bezatu M et al., 2013). Inappropriate disposal of solid waste and evacuation of waste water in public streets created breeding sites for insects, which may spread diarrhoea pathogens from the open waste to water or food (Sokhna T et al., 2014). Disposal of refuse in open around the house was an independent risk factor for diarrhea, (Hailemariam Berhe et al., 2016). Poor waste handling methods expose children to risk of contamination of food by flies. Inadequate sanitation factors such as presence of clogged drainage near/around the house and breeding places for

flies/insects near the house increase the risk of diarrhoea among children less than five years, (Takanashi et al, 2009).

Households that had access to safe water had less risk to develop diarrhea than their counterparts, (Stephen B et al., 2016). Lack of treatment of stored drinking water was associated with the high prevalence of diarrhoea (Sokhna T et al, 2014). Lack of safe water, basic sanitation and hygiene may account for as much as 88% of the disease burden due to diarrhoea (Elizabeth Omoladun Olorunoba1 et al., 2014). Shortage of safe water for drinking, cooking and cleaning may lead to diarrheal disease with food being a major cause when prepared or stored in unhygienic conditions (Muriithi David Ikua., 2014). Children with poor nutritional status and overall health, as well as those exposed to poor environmental conditions including unsafe drinking water, are more susceptible to severe diarrhoea and dehydration than healthy children (Remidius Kamuhabwa Kakulu, 2012). Infection is caused by a virus, bacteria or parasite through mediums such as contaminated drinking water, food and unclean surroundings (Briggs, D. 2008).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 INTRODUCTION.

3.1 STUDY/RESEARCH DESIGN.

A cross-sectional study design was adopted to assess for the prevalence and factors associated with diarrheal disease in children under the age of five years admitted in pediatric ward in JRRH.

3.2 SCOPE OF THE STUDY.

3.2.1 GEOGRAPHIC SCOPE.

This study was done at JRRH, children's ward in Nalufenya, located ½ km from Jinja town which is approximately 80 kilometers east of the capital city of Uganda (Kampala), not far from the source of the Nile.

It serves as both a primary contact hospital and as a regional referral hospital for (Bugiri, Iganga, Jinja, Kaliro, Kamuli, Kayunga, Namutumba, Buyende, Luuka, Namayingo, Mayuge, Biukwe, and parts of Mukono districts) with a population over 3.5 million people.

JRRH commonly known as Jinja hospital, is the largest hospital in eastern Uganda.

Jinja district has got over 69 health facilities with 5 HC IVs, 10 HC IIIs, over 30 HC IIs and 1 regional referral hospital and many others (Jinja health).

The district water department of Jinja is ensuring that all people have access to clean and safe water because the livelihood of any community depends on safe and sound sanitary environment. The present district safe water coverage is 65% assuming 100% functionality of water sources; however the current level of functionality is about 93% hence reducing the coverage to 60%. (Jinja district local government, 2016).

Jinja has 1198 domestic water points which serve a total of 330,618 people, of which 241,842 are in rural areas. One hundred and ninety two water points have been non-functional for over 5 years and are considered abandoned. (Directorate of water development, 2018).

3.2.2 SUBJECT/CONTENT SCOPE.

This study focused on children under the age of five years admitted to pediatrics ward in JRRH to assess for the prevalence and factors associated with diarrheal diseases.

3.2.3 TIME SCOPE.

The study took a period of one month, the month of July, 2018.

3.3 STUDY POPULATION.

The study population was focused on children under five years of age admitted to JRRH from 1st July to 31st of July, 2018.

3.4 SAMPLING TECHNIQUE.

Selection of the respondents for the study was done using the convenience sampling method, because it is relatively easy and inexpensive to conduct. By this way, all children under five years of age who were admitted to JRRH were selected into the study. The period of time for selecting subjects was from 1st to 31st July, 2018, 276 children were recruited into the study.

The following Kish Leshlie formulae were used to quantify the minimum sample size needed for the research.

$$N = \frac{Z^2 P (1-P)}{E^2}$$

Where:

N = Sample size

Z = Confidence interval.

P = Prevalence of under-five diarrhea.

The prevalence of under-five diarrhea in Uganda was 23.8%, (Ssenyonga R et al., 2009).

E = Margin of error (E = 5%)

Z = Standard Normal deviate (1.95)

$$N = \frac{1.95^2 \times 0.238 (1-0.238)}{(0.05)^2}$$

N = 276 children under five.

3.5 SELECTION CRITERIA.

3.5.1 INCLUSION CRITERIA.

All the children under five years of age admitted to JRRH from 1st to 31st July, 2018 were eligible for the study.

Children whose mothers/guardians gave consent participated in the study.

3.5.2 EXCLUSION CRITERIA.

Children with the following criterion were rejected for the study:

Those who were above five years of age.

Those who had been enrolled before in the same study were not re-enrolled.

Children whose parents/guardians did not consent were excluded from the study.

3.6 DATA PROCESS (TOOL AND PROCEDURE).

3.6.1 DATA COLLECTION INSTRUMENTS.

3.6.2 QUESTIONNAIRE.

A semi-structured questionnaire was orally administered to mothers of children aged under five years to facilitate proper understanding of the questions and it was also translated into the local languages of the region which are 'Lusoga and others like Luganda'. The questionnaire contained items linked to the variables of the study as indicated in the study questions. The questionnaire had 3 sections: a section on socio-demographics, a section on sanitation and hygiene; the questionnaire was developed in English language (see appendix.)

3.6.3 PRE-TESTING

The pre-testing was conducted on 5 mothers with children under five years of age admitted to pediatrics ward in JRRH. These people were not recruited into the study. This pre-testing was to check for the validity and reliability of the questionnaires to be administered to the respondents, and to avoid information distortion.

3.6.4 DATA MANAGEMENT.

Filled questionnaires were checked for completeness at the end of each data collection day within the hospital.

3.6.4 DATA PROCESSING AND ANALYSIS.

The primary data from the questionnaires was then coded for entry into the computer system. The raw data was extracted from the questionnaires by entering the results in an excel sheet. With the aid of Microsoft excel, the results were presented in tables, charts, and graphs as percentages and

frequencies which gave firsthand information about occurrence of diarrhea in children under five years for the respective characteristics.

3.7 ETHICAL CONSIDERATIONS.

3.7.1 CONSENT:

Permission to conduct the study was obtained from the faculty of clinical medicine and dentistry at KIU, WC. A permission letter was obtained from the executive director of JRRH through the chairman research committee JRRH that was countersigned by the head of department Pediatrics ward in JRRH.

All participants/respondents gave informed consent and signed a consent form prior to participating in the study.

3.7.2 VALIDITY AND RELIABILITY:

The pre-testing was conducted on 5 mothers with children under five years of age admitted to pediatrics ward in JRRH. These people were not recruited into the study. This pre-testing was to check for the validity and reliability of the questionnaires to be administered to the respondents and to avoid information distortion.

3.7.3 CONFIDENTIALITY:

The purpose of the study as well as the confidentiality of the information obtained were all entirely explained to the participants/respondents, where by all information provided was held confidential and the individual answers were not known by other people, except the interviewer and the coordinator of the study.

3.7.4 AUTONOMY:

The participant had the right to join the research or participate without any coercion or threats etc. and also had the right to withdraw from the interview/study at any stage without any consequence if he or she didn't wish to continue.

3.7.5 RISK AND BENEFITS.

There were no risks taken on joining the research project as a participant. And also no direct benefits like money or any other items were given to the participants besides proper follow up of the children while they were on wards.

CHAPTER FOUR

RESULTS.

4.0 INTRODUCTION.

A total number of 276 children under the age of five years admitted at JRRH in the month of July, 2018 participated in the study.

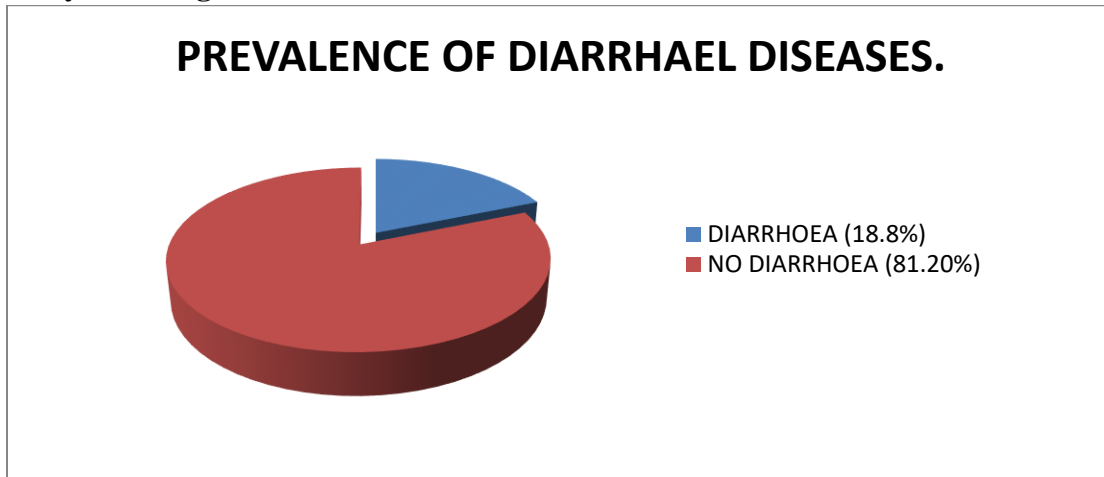
4.1 PREVALENCE OF DIARRHEAL DISEASES:

Table 1; provides a full description of the prevalence of diarrhea in children under the age of five admitted at JRRH in the month of July,2018 where out of the 276 children that participated, 52 had diarrheal diseases thus giving a prevalence of **18.8%**.

Table 1: Prevalence of diarrheal diseases among children below five years of age.

CHARACTERISTIC.		FREQUENCY/PERCENTAGE.
CHILDREN WITH DIARRHEA:	YES:	52 (18.8%)
	NO:	224 (81.2%)
	TOTAL:	276 (100%)

Figure 1: A pie chart showing the prevalence of diarrheal diseases among children below five years of age.



4.2 SOCIO-DEMOGRAPHIC DATA; (CHILD):

Table 2: Socio-demographic characteristics of the children and diarrheal prevalence.

CHARACTERISTICS		FREQUENCY.	DIARRHOEA	
			YES	NO
CHILD'S SEX:	MALES:	156 (56.5%)	34 (65.4%)	122 (54.5%)
	FEMALES:	120 (43.5%)	18 (34.6%)	102 (45.5%)
AGE IN MONTHS:	< 6 MONTHS:	15 (5.5%)	2 (3.8%)	13 (5.8%)
	6 – 12 MONTHS:	21 (7.6%)	4 (7.7%)	17 (7.6%)
	13 – 24 MONTHS:	76 (27.5%)	2 (3.8%)	74 (33.0%)
	25 – 59 MONTHS:	164 (59.4%)	44 (84.7%)	120 (53.6%)
RESIDENCE STATUS:	URBAN:	21 (7.6%)	1 (1.9%)	20 (8.9%)
	SEMI-URBAN:	90 (32.6%)	5 (9.6%)	85 (38.0%)
	RURAL:	165 (59.8%)	46 (88.5%)	119 (53.1%)
IMMUNISATION:	IMMUNISED TO SCHEDULE:	274 (99.3%)	50 (96.2%)	224 (100%)
	NOT FULLY IMMUNISED:	2 (0.7%)	2 (3.8%)	0 (0.0%)
ROTA VIRUS VACCINATION:	YES:	0 (0.0%)	0 (0.0%)	0 (0.0%)
	NO:	276 (100%)	52 (100%)	224 (100%)
DIARRHOEAL ILLNES IN THE PAST 3 MONTHS:	YES:	186 (67.4%)	49 (94.2%)	137 (61.2%)
	NO:	90 (32.6%)	3 (5.8%)	87 (38.8%)
TOTAL SIBLINGS AT HOME:	≤ 3:	132 (47.8%)	8 (15.4%)	124 (55.4%)
	≥ 4:	144 (52.2%)	44 (84.6%)	100 (44.6%)
NUMBER OF SIBLINGS <5 YEARS:	≤2:	118 (42.8%)	4 (7.7%)	114 (50.9%)
	>2:	158 (57.2%)	48 (92.3%)	110 (49.1%)

The above shows a detailed description of the socio-demographic characteristics of the children where most of the participants were male children, 156 (56.5%). Most of the children that participated were between 25-59 months of age, 164 (59.4%). Fifty nine percent were staying in rural areas and 274 (99.3%) were fully immunized as per the respective immunization schedules, with 0.0% having had Rota virus vaccination. 67.4% had a history of diarrheal illness in the past 3 months prior this episode, 57.2% had >2 siblings at home who are under the age of five whereas 52.2% has a total number of siblings at home of ≥ 4 children.

The prevalence of diarrhea was significantly high among children aged 25-59 months with (84.7%), residence in rural area (88.5%), not having been vaccinated for Rota virus (100%), and having more than 2 siblings under the age of five years (92.3%)

Figure 2: A pie chart showing the age of the children with diarrheal prevalence

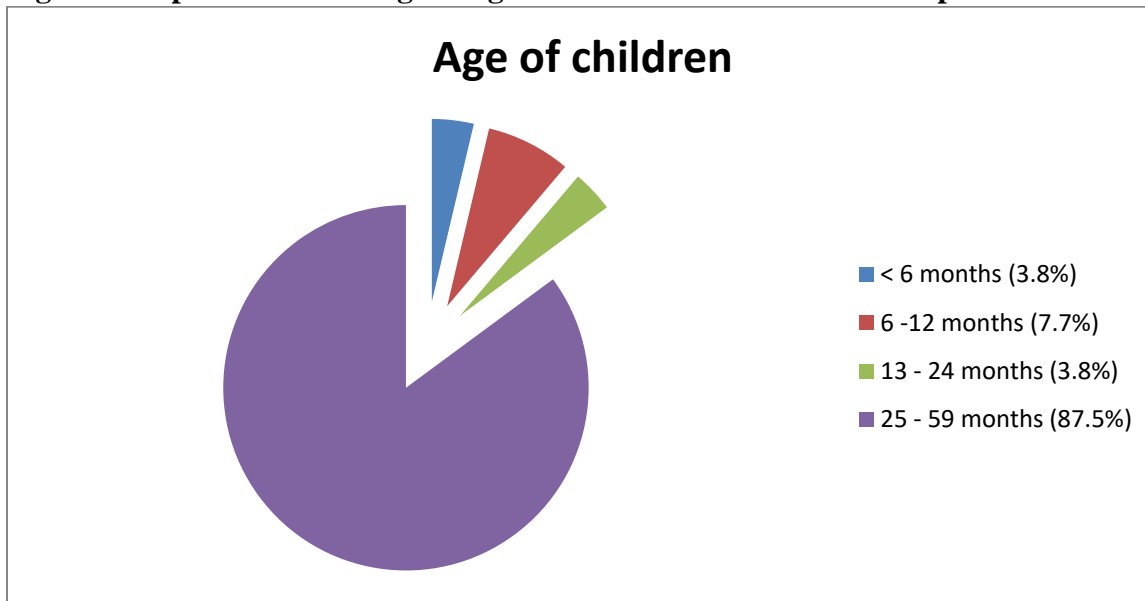


Figure 3: A pie chart showing residential status and diarrheal prevalence.

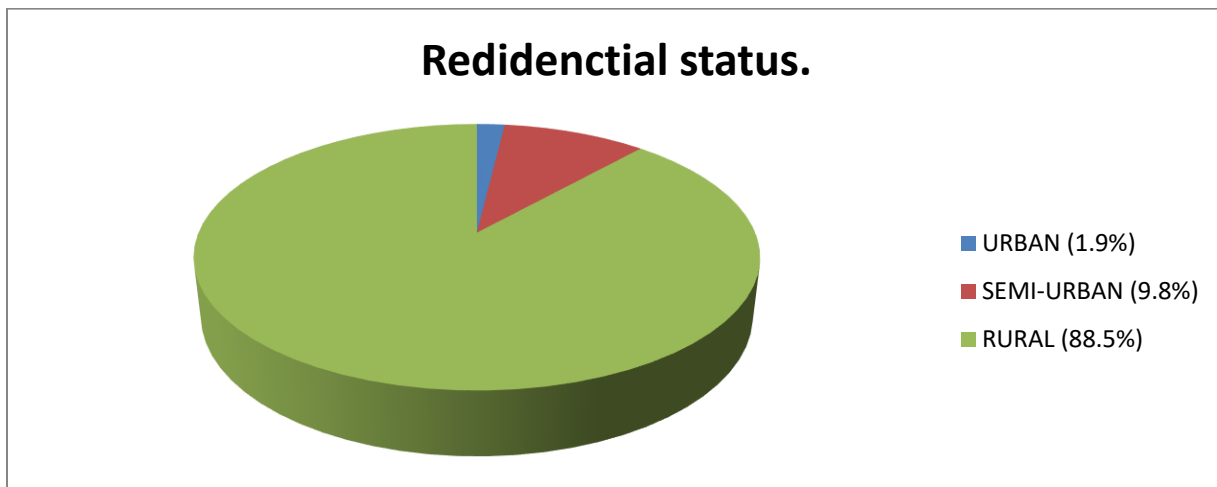


Figure 4: A bar graph showing Rota virus vaccination and diarrheal prevalence.

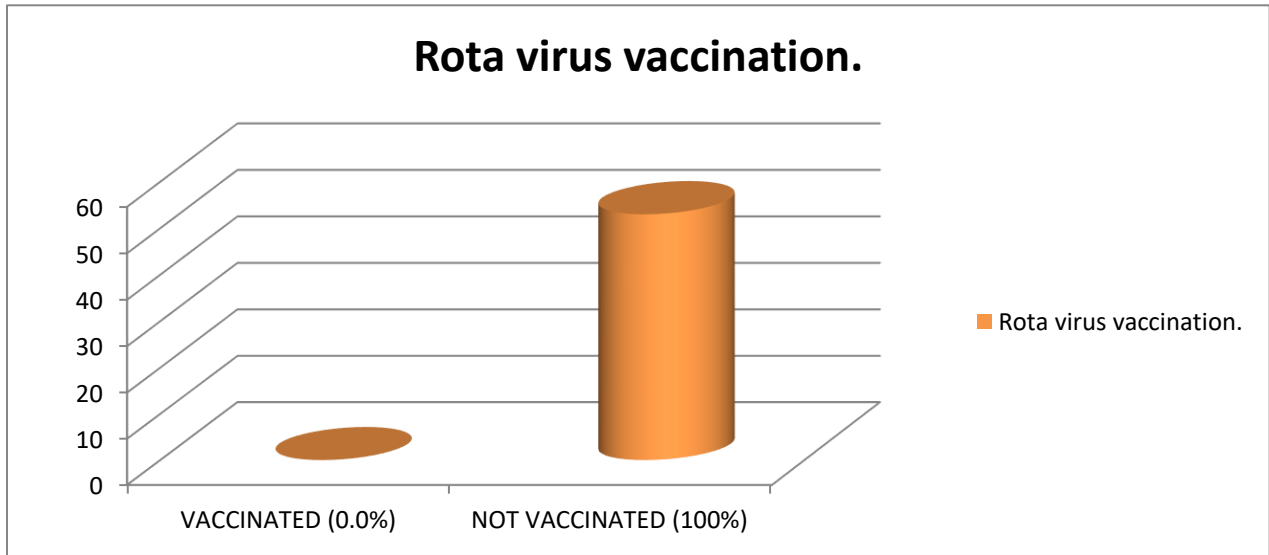
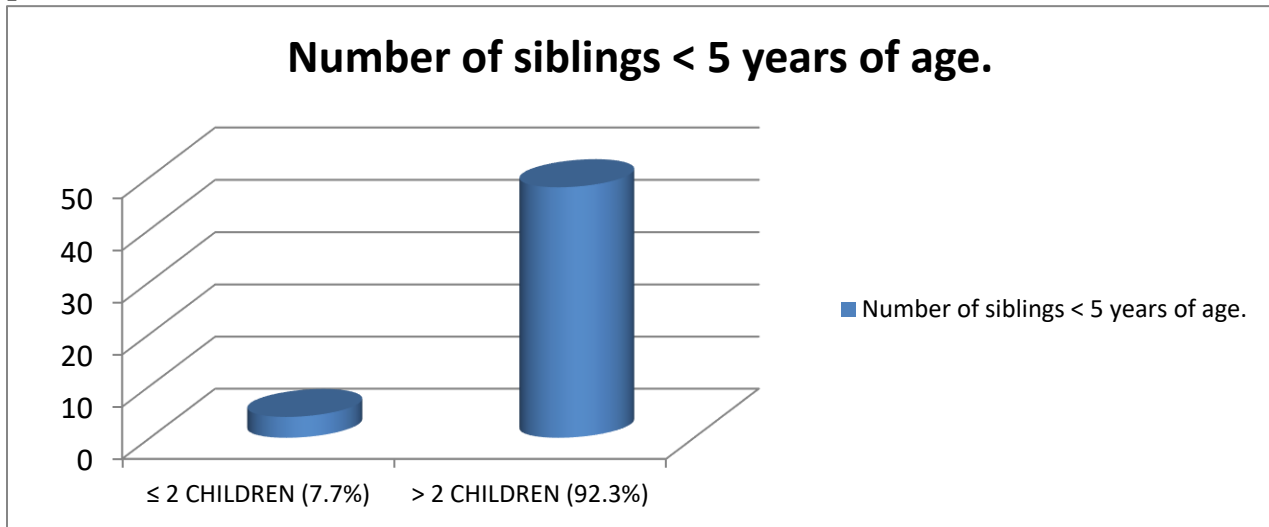


Figure 5: A bar graph showing the number of siblings < 5 years of age and diarrheal prevalence.



4.3 SOCIO-DEMOGRAPHIC DATA; (PARENT/GUARDIAN):

Table 3: Socio-demographics of the parent/guardian and diarrheal prevalence.

CHARACTERISTICS		FREQUENCY	DIARRHOEA	
			YES	NO
RELATIONSHIP WITH CHILD:	MOTHER:	201 (72.8%)	40 (76.9%)	161 (71.9%)
	FATHER:	58 (21.0%)	4 (7.7%)	54 (24.1%)
	GRAND PARENT:	17 (6.2%)	8 (15.4%)	9 (4.0%)
AGE OF THE PARENT/GUARDIAN:	<16 YEARS:	0 (0.0%)	0 (0.0%)	0 (0.0%)
	16 – 24 YEARS:	74 (26.8%)	28 (53.8%)	46 (20.5%)
	25 – 34 YEARS:	175 (63.4%)	12 (23.1%)	163 (72.8%)
	35– 45 YEARS:	21 (7.6%)	8 (15.4%)	13 (5.8%)
	>45 YEARS:	6 (2.2%)	4 (7.7%)	2 (0.9%)
MARITL STATUS:	MARRIED:	260 (94.2%)	48 (92.3%)	212 (94.6%)
	NOT MARRIED:	16 (5.8%)	4 (7.7%)	12 (5.6%)
EDUCATION LEVEL:	PRIMARY:	202 (73.2%)	50 (96.2%)	152 (67.9%)
	COLLEGE/INSTI TUION:	74 (26.8%)	2 (3.8%)	72 (32.1%)
OCCUPATION:	PEASANT FARMER:	198 (71.7%)	51 (98.1%)	147 (65.6%)
	FORMALLY EMPLOYED:	78 (28.3%)	1 (1.9%)	77 (34.4%)
MONTHLY NET INCOME(ug shs)	<10,000:	26 (9.4%)	4 (7.7%)	22 (9.8%)
	10,000 – 50,000:	138 (50%)	44 (84.6%)	94 (42.0%)
	50,000 – 100,000:	58 (21.0%)	4 (7.7%)	54 (24.1%)
	100,000 – 500,000:	37 (13.4%)	0 (0.0%)	37 (16.5%)
	500,000 – 1,000,000:	11 (4.0%)	0 (0.0%)	11 (4.9%)
	>1,000,000:	6 (2.2%)	0 (0.0%)	6 (2.7%)

Table above shows a full description of the socio-demographic characteristics of the parent /guardian of the children that participated in the study, where 72.8% of the parents were mothers and basically between ages of 25-34 years (63.4%).Ninety four percent of the parents/guardian were married. 202, (73.2%) of the parents had attained primary education and only 26.8% had college/institutional education. Only 28.3 were formally employed with the rest being peasant farmers (71.7%). And 50% earned a net monthly income of between 10,000 – 50,000 ug shs.

The prevalence of diarrhea was significantly high when the parent/guardian was 16-24 years (53.8%), primary education level (96.2%), being a peasant farmer (98.1%) and having a net monthly income of between 10,000-50,000 ug shs (84.6%).

Figure 6: A bar graph showing the age of the parent/guardian of the children and diarrheal prevalence.

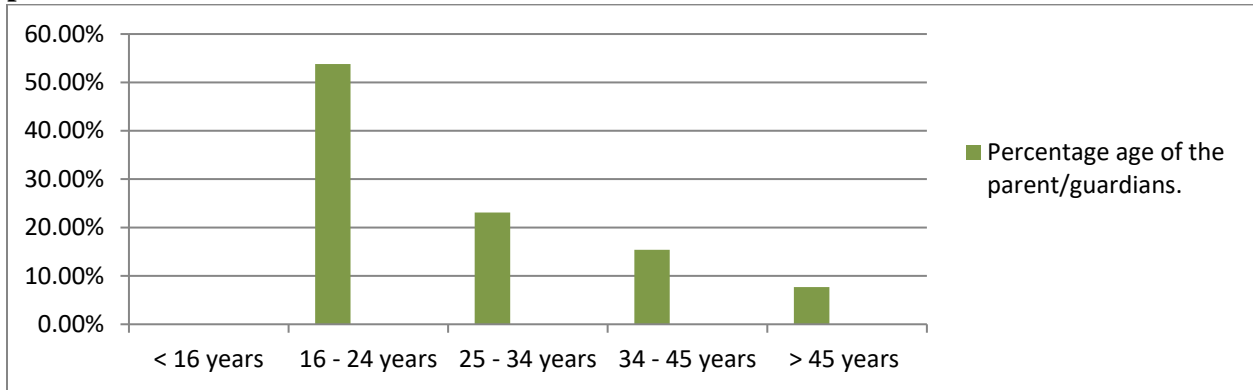


Figure 7: A pie chart showing the education level of the parent/guardian and diarrhea.

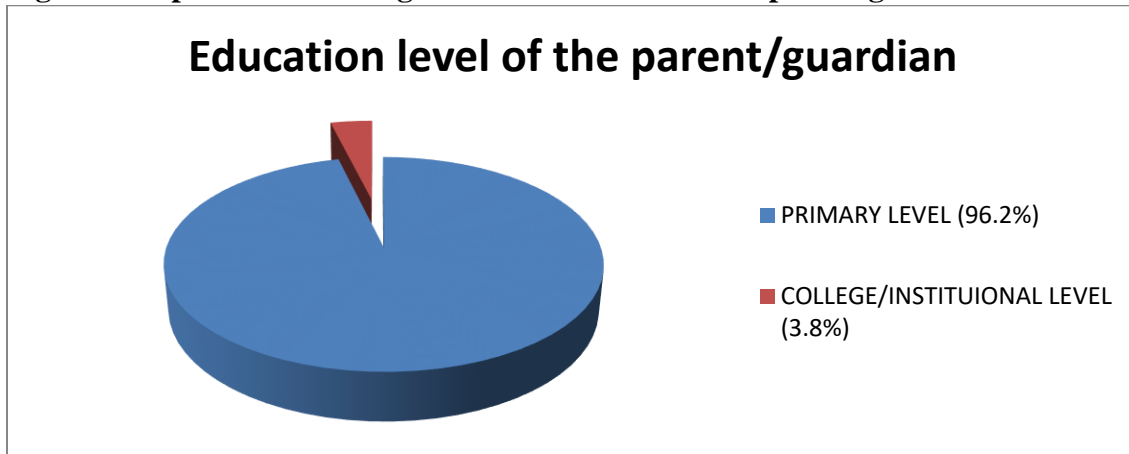


Figure 8: A bar graph showing occupation status of the parents and diarrhea.

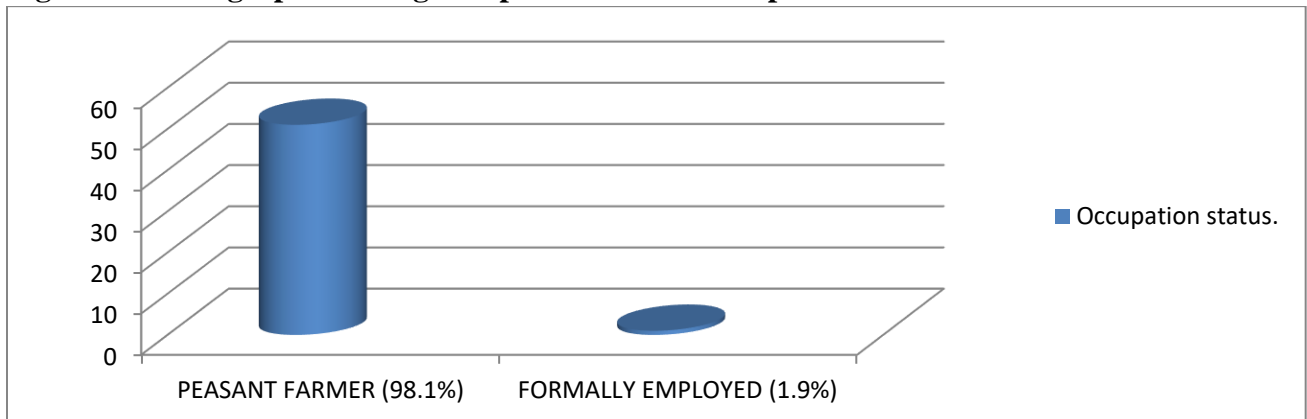
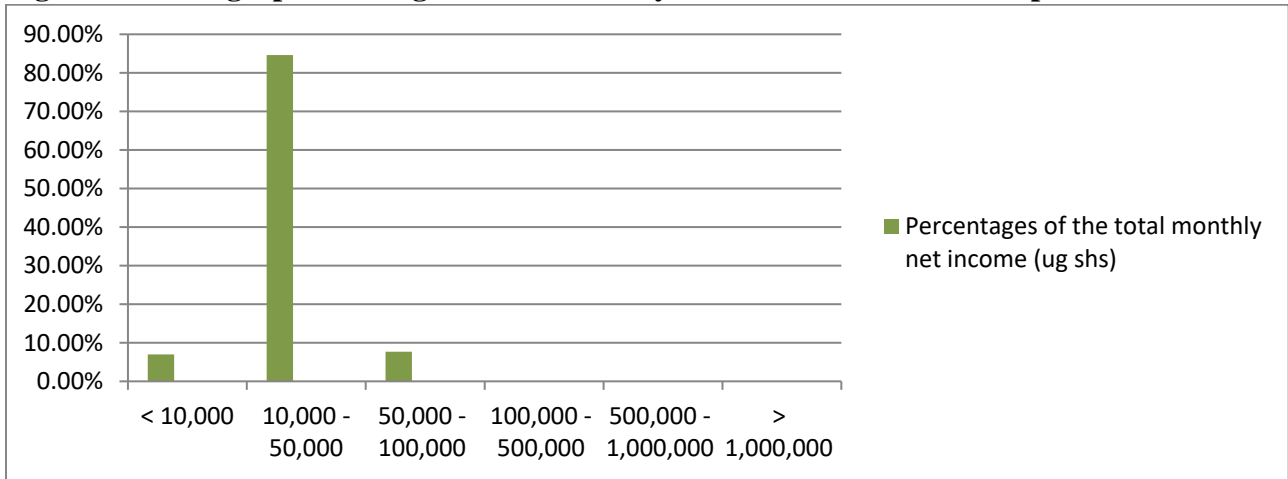


Figure 9: A bar graph showing the total monthly net income and diarrheal prevalence.



4.4 SANITATION AND HYGIENE PRACTICES.

Table 4: Sanitation and hygiene practices at home both by the parent/guardian and child and diarrheal prevalence.

CHARACTERISTICS		FREQUENCY.	DIARRHOEA	
			YES	NO
TOILET/LATRINE FACILITY:	YES:	274 (99.3%)	50 (96.2%)	224 (100%)
	NO:	2 (0.7%)	2 (3.8%)	0 (0%)
CHILDRENS FEACAL DISPOSAL:	BURIED:	26 (9.4%)	23 (44.2%)	3 (1.4%)
	OPEN SURROUNDING:	40 (14.5%)	20 (38.5%)	20 (8.9%)
	TOILET/LATRINE:	210 (76.1%)	9 (17.3%)	201 (89.7%)
NO. OF PEOPLE USING THE TOILET:	≤5:	67 (24.3%)	14 (26.9%)	53 (23.7%)
	>5:	209 (75.7%)	38 (73.1%)	171 (76.3%)
TOILET FACILITY REGULARY CLEANED:	YES:	108 (39.1%)	3 (5.8%)	105 (46.9%)
	NO:	168 (60.9%)	49 (94.2%)	119 (53.1%)
HOUSEHOLD GARBAGE DISPOSAL:	RUBBISH PIT:	124 (44.9%)	8 (15.4%)	116 (51.8%)
	OPEN SURROUNDING/GARDEN:	152 (55.1%)	44 (84.6%)	108 (48.2%)
WASTE WATER DISPOSAL:	SEWAGE SYSTEM:	98 (35.5%)	14 (26.9%)	84 (37.5%)
	GARDEN/OPEN SURROUNDING:	178 (64.5%)	38 (73.1%)	140 (62.5%)
CHILD BATHING:	BATHROOM:	62 (22.5%)	6 (11.5%)	58 (25.9%)
	RIVER/POND:	36 (13.0%)	8 (15.4%)	28 (12.5%)
	IN A BASIN INSIDE THE HOUSE:	178 (64.5%)	38 (73.1%)	138 (61.6%)
CHILD FEEDING ON HIM/HERSELF:	YES:	240 (87.0%)	48 (92.3%)	192 (85.7%)
	NO:	36 (13.0%)	4 (7.7%)	32 (14.3%)
HAND WASHING;				
AFTER TOILET USE:	NEVER:	176 (63.8%)	48 (92.3%)	128 (57.1%)
	SOMETIMES:	76 (27.5%)	3 (5.8%)	73 (32.6%)
	ALWAYS:	24 (8.7%)	1 (1.9%)	23 (10.3%)
AFTER HELPING CHILD DEFEACTE:	NEVER:	148 (53.6%)	46 (88.5%)	102 (45.5%)
	SOMETIMES:	98 (35.5%)	5 (9.6%)	93 (41.5%)
	ALWAYS:	30 (10.9%)	1 (1.9%)	29 (13.0%)
BEFORE EATING AND FEEDING THE CHILD:	NEVER:	122 (44.2%)	49 (94.2%)	73 (32.6%)
	SOMETIMES:	98 (35.5%)	2 (3.8%)	96 (42.9%)
	ALWAYS:	56 (20.3%)	1 (1.9%)	55 (24.5%)
BEFORE FOOD PREPARATION:	NEVER:	188 (68.1%)	50 (96.2%)	138 (61.6%)
	SOMETIMES:	76 (27.5%)	2 (3.8%)	74 (33.0%)
	ALWAYS:	12 (4.4%)	0 (0.0%)	12 (5.4%)

SOAP USE FOR HAND WASHING:	YES:	105 (38.0%)	5 (9.6%)	100 (44.6%)
	NO:	171 (62.0%)	47 (90.4%)	124 (55.4%)
WATER SOURCE:	TAPS:	50 (18.1%)	6 (11.5%)	44 (19.4%)
	BOREHOLES:	187 (67.8%)	34 (65.4%)	153 (68.3%)
	SPRINGS/WELLS:	39 (14.1%)	12 (23.1%)	27 (12.3%)
WATER PREPARATION METHOD:	BOILING:	61 (22.1%)	1 (1.9%)	60 (26.8%)
	CHLORINATING(WATER GUARD):	28 (10.1%)	2 (3.8%)	26 (11.6%)
	NONE:	187(67.8%)	49 (94.2%)	138 (61.6%)
WATER STORAGE CONTAINERS:	WITH LIDS:	179 (64.9%)	2 (3.8%)	177 (79.0%)
	WITHOUT LIDS:	97 (35.1%)	50 (96.2%)	47 (21.0%)
REGULAR CLEANING OF THE STORGAE WATER CONTAINERS:	YES:	165 (59.8%)	3 (5.8%)	162 (72.3%)
	NO:	111 (40.2%)	49 (94.2%)	62 (27.7%)
COOKED FOOD STORAGE FOR LATER USE:	REFRIGERTAOR:	1 (0.4%)	0 (0.0%)	1 (0.5%)
	CUPBOARD:	52 (18.8%)	4 (7.7%)	48 (21.4%)
	FLOOR/GROUND:	223 (80.8%)	48 (92.3%)	175 (78.1%)
CHILD STILL BREAST FEEDING:	YES:	48 (17.4%)	2 (3.8%)	46 (20.5%)
	NO:	228 (82.6%)	50 (96.2%)	178 (79.5%)
FOOD MOSTLY TAKEN BY THE CHILD:	MATOOKE:	256 (92.8%)	28 (53.8%)	208 (92.9%)
	RICE:	256 (92.8%)	48 (92.3%)	208 (92.9%)
	SWEET POTAOES:	256 (92.8%)	50 (96.2%)	206 (92.0%)
	POSHO:	248 (90.0%)	50 (96.2%)	198 (88.4%)
	BEANS:	256 (92.8%)	48 (92.3%)	201 (89.7%)
	GROUND NUTS:	247 (89.5%)	47 (90.4%)	200 (89.3%)
	BREAST MILK ONLY	15 (5.4%)	1 (1.9%)	14 (6.3%)
CHILD NUTRITIONAL STATUS:	WELL NOURISHED:	224 (81.2%)	2 (3.8%)	222 (99.1%)
	MODERATE ACUTE MALNUTRITION:	44 (15.9%)	44 (84.6%)	0 (0.0%)
	SEVERE ACUTE MALNUTRITION:	8 (2.9%)	6 (11.6%)	2 (0.9%)

The diarrheal prevalence was significantly associated with the children's fecal disposal especially those who buried the feaces and who disposed in the open surrounding with (44.2%) and (38.5%) respectively, no regular cleaning of the toilet/latrine facility (94.2%), open surrounding/garden disposal of house garbage and waste water (84.6%) and (73.1%) respectively. The prevalence was also significant with no hand wash after toilet use (92.3%), after helping the child defecate (88.5%), before eating and feeding the child (94.2%), and before food preparation (96.2%). No soap use for hand washing (90.4%), no any water preparation method (94.2%), not regularly cleaning the water storage containers (94.2%), and the child's nutritional status of moderate acute malnutrition (84.6%).

Figure 10: A pie chart showing the children's fecal disposal and diarrheal prevalence.

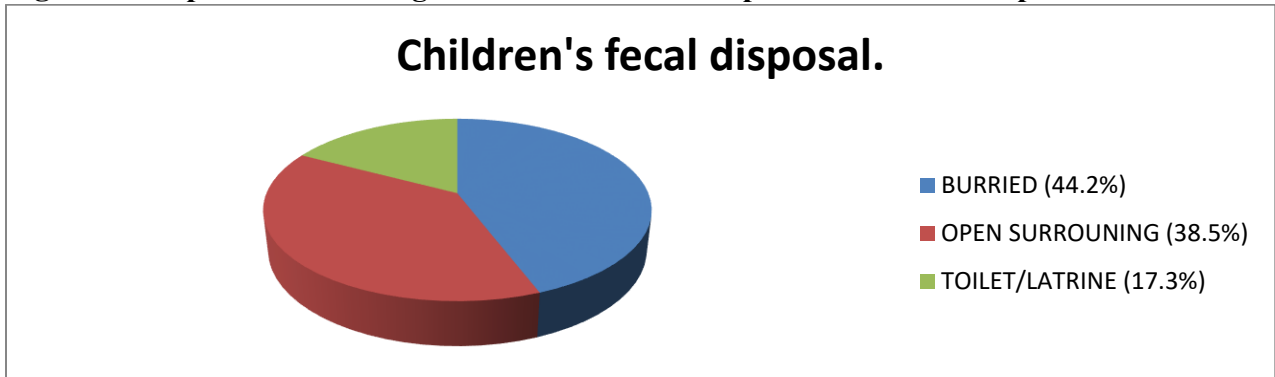


Figure 11: a pie chart showing how regular the toilet/latrine is cleaned.

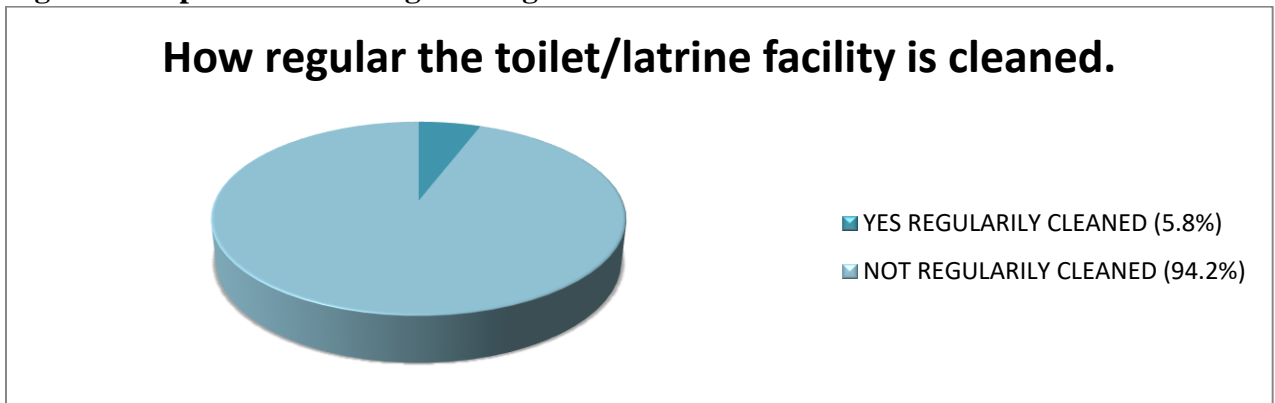


Figure 12: A pie chart showing household garbage disposal.

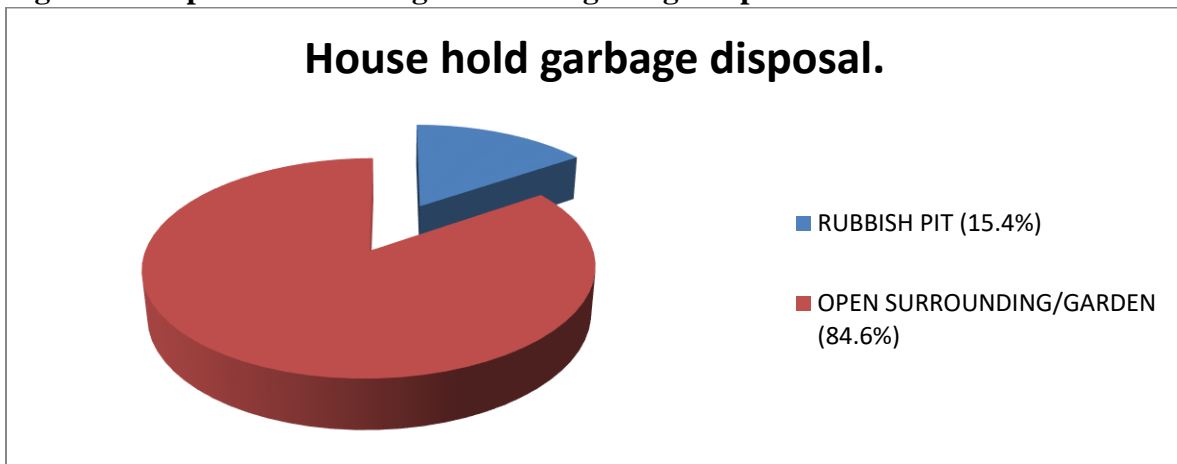


Figure 13: A pie chart showing water waste disposal.

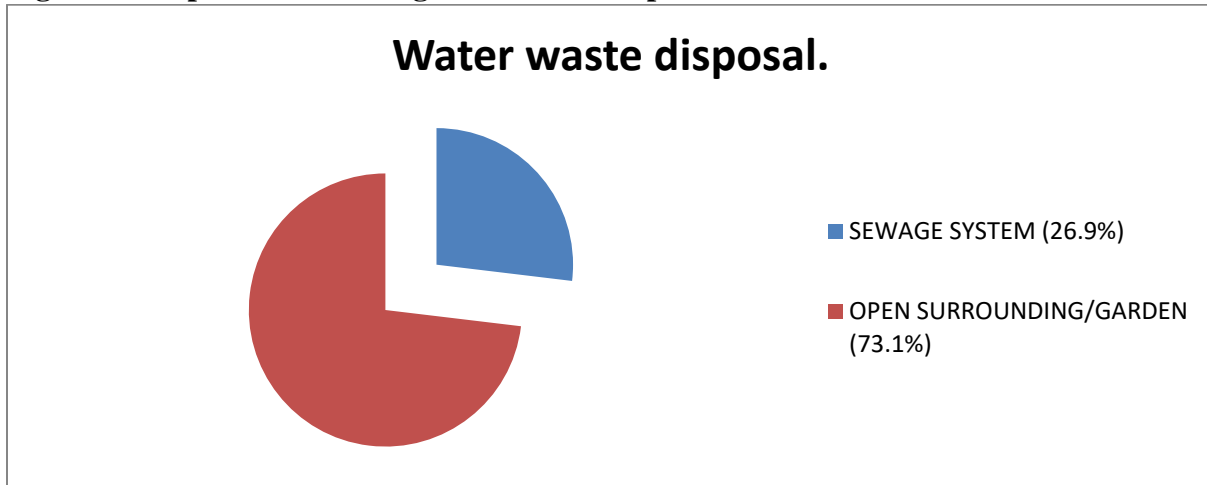


Figure 14: A bar chart showing hand washing.

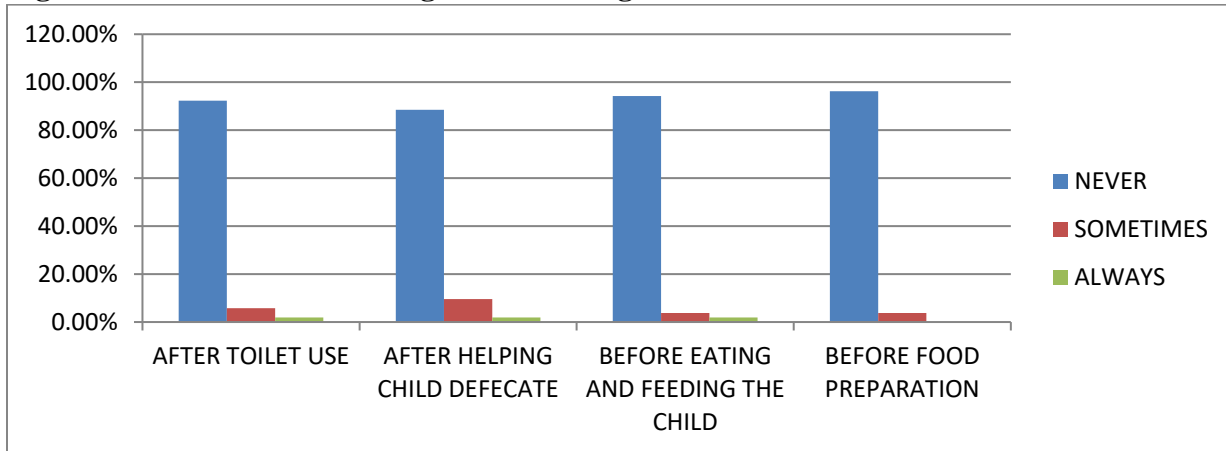


Figure 15: A pie chart showing soap use when hand washing.

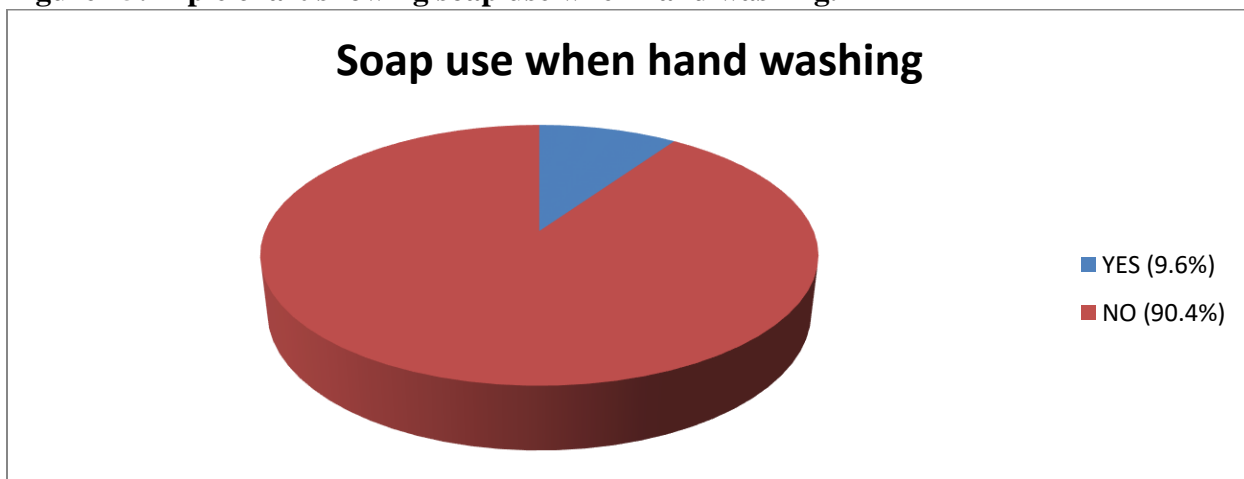


Figure 16: A pie chart showing the different water preparation methods.

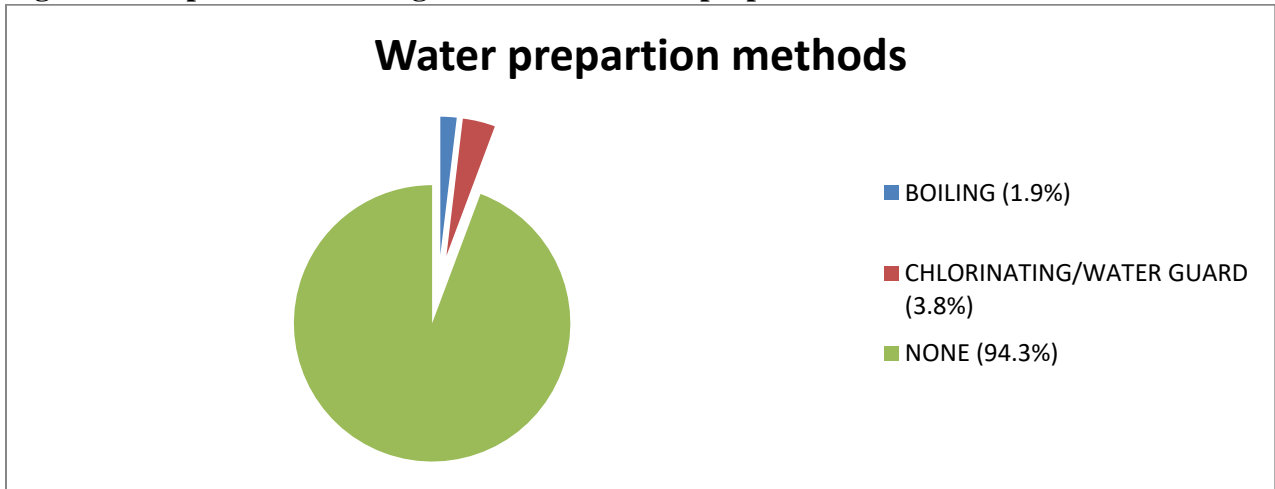


Figure 17: A pie chart showing regular cleaning of the storage water containers.

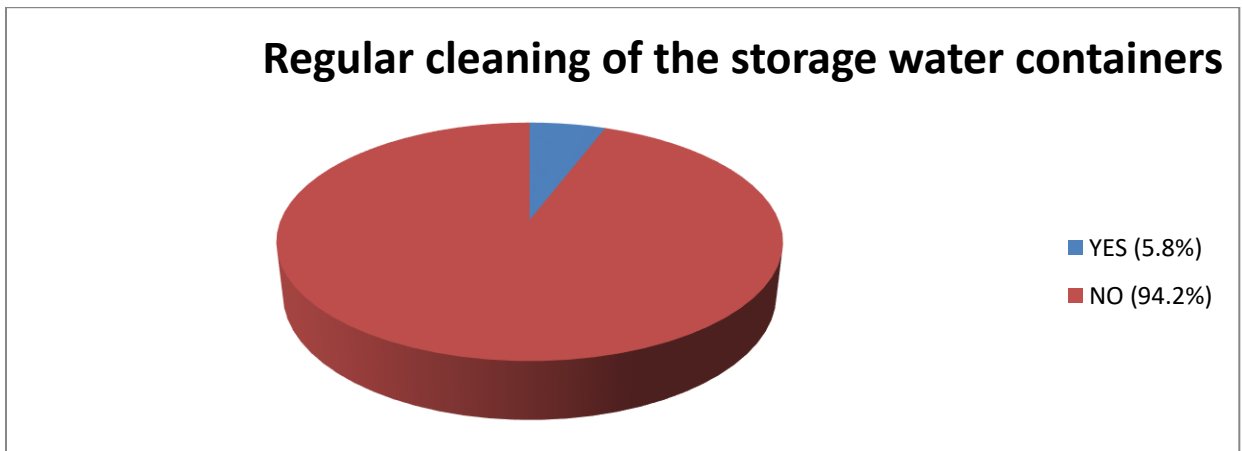
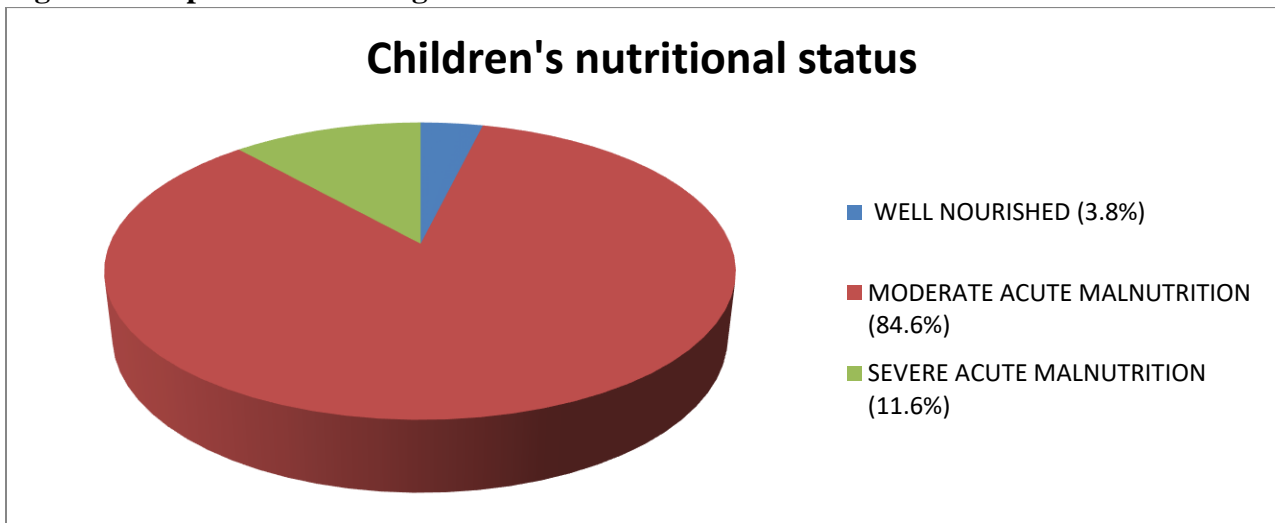


Figure 18: A pie chart showing the nutritional status of the children.



CHAPTER FIVE

5.0 DISCUSSION.

This study investigated the prevalence and factors associated with diarrheal diseases among children under the age of five years admitted in JRRH, in eastern Uganda. The one-month prevalence of diarrheal diseases in children under the age of five years was 18.8%.

The prevalence was positively associated with the age of children between 25-59 months which findings were similar to (Aliegn T et al., 2016) in his study on the incidence and risk factors of diarrheal illness where children of age 3-5 years were markedly affected with diarrhea, due to the environmental and unsafe fecal disposal methods. Residence in rural area was also significantly associated with high prevalence and it was also in line with a similar study by (Bezatu M et al., 2013) where he demonstrated a higher diarrheal incidence in children staying in rural areas due to lack of access of water and sanitation facilities than those in urban areas. Not having been vaccinated for Rota virus (100%), and having >2 siblings under the age of five years were big risk factors for diarrheal disease, our findings were comparable to those done elsewhere in Africa who showed that having two or more siblings under the age of five was associated with increased diarrheal incidence due to the challenges of taking care of multiple young children, decreased quality of care and attention by the parents, and incapability to care for all the many children (Bezatu M et al., 2013, Wondwoson W et al., 2015, Siziya S et al., 2013)

The prevalence of diarrhea was significantly high when the parent was 16-24 years (53.8%), primary education level of less than primary seven (96.2%) which was also in support with those who said that mothers/guardians who had little or no formal education their children had higher chances of getting diarrheal diseases since their manner of healthcare seeking and practice was poor (Aliegn T et al., 2016, Wondwoson W et al., 2015). Children of peasant farmers (98.1%) and those having a net monthly income of 10,000-50,000 ug shs (84.6%) showed a higher risk of diarrhea compared to those working in private or public sectors and those with a higher pay. Similar findings elsewhere in Africa were comparable observing that economically poor households couldn't afford soap for hand washing, and aqua guard to protect microbial contamination in water and also couldn't afford to construct toilets thus a higher prevalence. (Sokhna T et al., 2014, Wondwoson W et al., 2015)

The diarrheal prevalence was significantly high associated with the children's fecal disposal especially those who buried the feces and who disposed in the open surrounding which was in line with (Bezatu M et al, 2013) and (Teklemichael G et al, 2012) where poor refuse disposal led children to get into direct contact with the fecal excreta as they crawl and also could be assessed by the vectors and rodents that could later access the food. No regular cleaning of the toilet/latrine facility was also positively associated with diarrhea that was similar to (Takanashi et al, 2009) and (Bezatu M et al., 2013) where presence of dirt and feces on toilet floors and foul smelling toilets are important factors predisposing children to diarrhea.

Open surrounding/garden disposal of house garbage and waste water (84.6%) and (73.1%) respectively that was in agreement with (Takanashi et al., 2009) who showed that poor waste handling exposed children to risk of contamination of food by flies and (Sokhna T et al., 2014) that inappropriate disposal of solid waste created breeding sites for insects that may spread diarrheal pathogens from open waste to water or food. The prevalence was also significant with no hand wash after toilet use, after helping the child defecate, before eating and feeding the child, and before food preparation and no soap use for hand washing where (Aliegn T et al, 2016) , (Takanashi et al, 2009). No any water preparation methods, not regularly cleaning the water storage containers were also positively associated with diarrhea diseases that were also similar to (Stephen B et al., 2016), (Sokhna T et al., 2014) and (Muriithi DI, 2014), where households that had access to safe water had less risks to develop diarrhea, and that lack of treatment of stored drinking water, shortage of safe water for drinking, cooking cleaning was associated with a higher prevalence, child's nutritional status of moderate acute malnutrition (84.6%) where (Remidius KK, 2012), showed that children with poor nutritional status and overall health were more susceptible than the healthy children .

5.1 LIMITATIONS OF THE STUDY.

Immunization data and age of the child was not just obtained from the child health card, it was just self-reported by the parent/guardian since most of them used not to carry the cards with them while coming to hospital.

Anthropometric measurements were not personally done to classify the nutritional status; rather the nutritional status was based on the documentations done by the clinicians on ward in the patient's file.

Microbiological analysis of the stool samples was not undertaken mainly due to budget limitations.

The information on the prevalence of diarrhea may not reflect the actual situation that may be observed in the other various seasons of the year, as the information on diarrhea was collected in July which is a dry season.

The study depended on the willingness of the participants to provide accurate and truthful Information. This was addressed by taking time to explain to the guardian about the need for Accurate information and potential benefits of the study to the child and other similar Children.

Despite these limitations, the study provides new insight in the extent of diarrhea among children under the age of five years in JRRH. Our results might be helpful for developing appropriate interventions for preventing childhood diarrhea in the study area.

5.2 RECOMMENDATIONS.

Further studies should be done still on the same study population to note the prevalence of diarrhea at the other seasons of the year especially during the rainy season so as we can have a comparison and more clear picture on the prevalence of diarrhea disease in JRRH.

Other studies should be done to evaluate the prevalence only among the malnourished children admitted to JRRH, and also show the effects of malnutrition on diarrhea and the effects of diarrhea on malnutrition.

Another study should be done to evaluate the behavioral risk factors for diarrhea in the study population and conduct further formative research to identify cultural beliefs among parents/guardians of children under the age of five on diarrhea prevalence.

Education on health among guardians to malnourished children should be intensified in the hospital to encourage proper children's fecal disposal, proper hand washing practices as well as proper preparation and storage of drinking water.

Long term measures that the government should consider include promotion of fully functional Families, improvement in socioeconomic status as well as encouraging students to go beyond Primary educational level.

Modifications of the factors will lead to a reduction in the prevalence of diarrhea disease in children under five years of age. Intervention programs for example increasing priority of solid waste and water waste management should be introduced and tested especially in the neighboring districts of Jinja in order to reduce the prevalence and burden of diarrhea

5.3 CONCLUSION.

With the one-month's diarrheal prevalence of 18.8%. In the first model, diarrheal diseases were strongly associated with the children's age of between 25-59 months, rural area residence, no Rota virus vaccination and having >2 siblings under the age of five .

In the second model, young parental age of between 16-24 years, low or no parental education, being a peasant farmer and low net monthly income of between 10,000-50,000 ug shs, had a positive relation to the prevalence of diarrhea.

In the third model it shows a very significant relationship between sanitation factors and diarrhea prevalence where the open surrounding and burial disposal of the children's fecal matter, not regularly cleaning the toilets/latrines facilities, open surrounding/garden disposal of household garbage and waste water, no soap use and no hand washing, not regularly cleaning the water storage containers were associated with higher risks for developing diarrhea. And lastly being malnourished.

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APPENDIX.

APPENDIX. A: CONSENT FORM.

I ama researcher from Kampala International University, western campus, Ishaka Bushenyi. I seek your consent to participate in my ongoing research study entitled “The prevalence and factors associated with diarrheal disease among children under the age of five years”, so that we could employ proper measures toward its prevention.

The study is free and you can also withdraw from it at any moment you feel like. This information will be kept secret and confidential, except to the researcher and the coordinator/supervisor of this study.

If you decide to participate, you will sign below on this form as a way to show that you have fully understood and accepted to be part of the research without any coercion or threat or any monetary benefits.

If you ever have questions about this study, you should contact the Principal Researcher Mwesigwa Katerega Joshua, on 0778-969845/0750-659219. For questions about your rights as a participant, you may contact Dr. SK Mirembe and Dr. Tenywa Emmanuel my supervisors of this study (Mobile: 0776-990404 and 0782-840944 respectively). Do you have any questions?

Consent agreement:

I.....here clearly understood the explanations given to me about the said study in the language I best understand (.....language). I have also appreciated the positive effects that the research will have on the welfare of my community.

I therefore hereby consent to participate in the above study by attaching my signature/thumbprint here below.

Participant:

Name/IP No:**Signature/Thumbprint:**

Date:

Witness (Name): **Signature/Thumbprint:**

Date:

Researcher: **Signature/Thumbprint:**

Date:

APPENDIX. B: QUESTIONNAIRE.

CODE NUMBER:

Is the child having diarrhea? Yes (), No ()

SECTION 1. SOCIO-DEMOGRAPHIC DATA:

(A): CHILD; (fill in the space and also tick in the appropriate bracket respectively);

1. Name of the child/IP No:

2. Date of birth:

3. Sex:

4. Age in months:

a. < 6 months: ()

b. 6 -12 months: ()

c. 13 - 24 months: ()

d. 25 – 59 months: ()

5. Place of residence:

6. Status of the residence;

a. Urban: ()

b. Semi-urban: ()

c. Rural: ()

7. Birth order:

8. Tribe:

9. Religion:

10. Immunization status of the child:

a. Not immunized: ()

b. Partial/incomplete immunization: ()

c. Fully immunized: ()

11. Any diarrheal illness in the last 3 months:

a. Yes: ()

b. No: ()

12. Total number of siblings at home:

13. Number of siblings < 5 years of age:

(B): PARENT/GUARDIAN;

1. Relationship with the child:
 - a. Mother: ()
 - b. Father: ()
 - c. Grandparent: ()
 - d. Any other: ()
2. Age of the parent/guardian:
 - a. < 16 years: ()
 - b. 16 - 24 years: ()
 - c. 25 - 34 years: ()
 - d. 35 - 45 years: ()
 - e. > 45 years: ()
3. Marital status:
 - a. Married: ()
 - b. Widow/widower: ()
 - c. Separated/divorced: ()
 - d. Single: ()
4. Education level:
 - a. None: ()
 - b. Primary: ()
 - c. Secondary/college: ()
 - d. Tertiary/university: ()
5. Occupation:
 - a. Peasant farmer: ()
 - b. Business person: ()
 - c. Formally employed: ()
 - d. Student: ()
 - e. Any other:
6. Approximate total monthly net income:
 - a. <10,000 ug shs.

- b. 10,000 – 50,000 ug shs.
- c. 50,000 – 100,000 ug shs.
- d. 100,000 – 500,000 ug shs.
- e. 500,000 – 1,000,000 ug shs.
- f. > 1,000,000 ug shs.

SECTION 2. SANITATION AND HYGIENIC PRACTICES: (tick in the appropriate bracket).

1. Do you have a toilet/larine facility: yes () no (). If No, specify:
2. Children’s fecal disposal.
 - a. Buried (),
 - b. Open surrounding ()
 - c. Toilet/Latrine ()
3. How many people use the toilet/latrine facility:
4. Is the toilet/latrine facility regularly cleaned: yes () no ().
5. Where do you dispose the household garbage?
 - a. Rubbish pit ()
 - b. Open surrounding (),
 - c. Other:
6. Where do you dispose of waste water?
 - a. Sewage system (),
 - b. Pond (),
 - c. Garden (),
 - d. Other:
7. Where do you often bath your child from?
 - a. River ()
 - b. Pond ()
 - c. Bathroom ()
 - d. Other:
8. Does your child feed on his/her own?
 - a. Yes ()

- b. No (), If no, go to question 9
9. If yes, how does the child feed on his/her own?
- a. With spoon (),
 - b. With his/her hands ()
 - c. Other:
10. Do you often wash the child's hands before eating? Yes (), No ()
11. If yes, how do you treat the child's hands before eating any food?
- a. Washing by water only ()
 - b. Washing by water with soap (),
 - c. Others:
12. Do you often wash your hands?
- a. After going to toilet. Never (), sometimes (), usually ()
 - b. After helping your child defecates? Never (), sometimes (), usually ()
 - c. Before eating and feeding your child. Never (), sometimes (), usually ()
 - d. Before preparing foods for your child. Never (), sometimes (), usually ()
13. How do you wash your hands? With water only (), Water and soap (),
other:
14. What is the source of your water:
- a. Tap (),
 - b. Bore holes (),
 - c. Springs (),
 - d. Wells (),
 - e. Others:
15. Preparation of water for drinking:
- a. Boiling: ()
 - b. Chlorinating (water guard): ()
 - c. Sedimentation: ()
 - d. None: ()
16. What kind of utensils do you use for storing water? Storage containers without lid ()
Storage containers with lid ().
17. Do you always clean/empty the storage container before replacing with fresh water?

- a. Yes ()
 - b. No ().
18. Do you always wash your hands before cooking/feeding the child: yes (), no ()
19. What kind of food does the child eat most:
- a. Matooke
 - b. Rice
 - c. Sweet potatoes
 - d. Posho
 - e. Breastfeeding only
 - f. Others:
20. Do you store cooked food for later use: yes (), no ()
21. If yes, how do you store the cooked food:
- a. In the refrigerator. ()
 - b. In the cupboard shelves. ()
 - c. Remains in the saucepan on ground. ()
 - d. Others:

For those less than 24 months:

22. Does the child breast feed? Yes (), no ().
23. If yes; onset of complementary feeds:
- a. From birth: ()
 - b. 1 - 3 months: ()
 - c. 3 - 6 months: ()
 - d. > 6 months: ()
24. If not breast feeding, why and when was it stopped:

NUTRITIONAL STATUS:

25. Well nourished: Yes (), No ()
26. If no,
- a. Moderate acute malnutrition ($>-3SD$ and $>-2SD$) ()
 - b. Severe acute malnutrition ($<-3SD$) ()

**APPENDIX.C: BUDGET FOR THE RESEARCH STUDY DONE DURING THE
MONTH OF JULY/2018**

ITEM	QUANTITY	PRICE @ ITEM.	AMOUNT (ug shs)
RESEARCH PROPOSAL	2	6,000	12,000
RESEARCH DISSERTATION	3	20,000	60,000
QUESTIONNAIRES	276	500	138,000
STATIONARY			20,000
SPSS SOFTWARE ANALYSIS	1	80,000	80,000
TRANSPORT		50,000	50,000
COMMUNICATION/AIRTIME			20,000
MISCELLINEOUS			100,000
TOTAL			490,000.

APPENDIX D: INTRODUCTORY LETTER FROM THE UNIVERSITY



KAMPALA INTERNATIONAL
UNIVERSITY – WESTERN CAMPUS

P O BOX 71, ISHAKA UGANDA
Tel: +256 200923534
www.kiu.ac.ug

OFFICE OF THE DEAN
FACULTY OF CLINICAL MEDICINE & DENTISTRY

14/06/2018

TO WHOM IT MAY CONCERN

RE: MWESIGWA KATEREGA JOSHUA (BMS/0026/133/DU)

The above named person is a fifth year student at Kampala International University pursuing a Bachelor of Medicine, Bachelor of Surgery (MBChB) Programme.

He wishes to conduct his student Research in your community.

Topic: Prevalence and factors associated with acute diarrheal diseases among children under 5 yrs admitted in pediatric ward at Jinja Regional Referral Hospital

Supervisor: Dr. SK Mirembe

Any assistance given will be appreciated.

S-O. Akib

Dr. Akib Surat O
Deputy Executive Director / Assoc Dean (FCM & D)



“Exploring the Heights”

Assoc. Prof Ssebuufu Robinson, Dean (FCM & D) 0772 507248 email: rssebuufu@gmail.com
Dr. Akib Surat Associate Dean FCM & D) email: doctorakib@yahoo.com

APPENDIX E: INTRODUCTORY LETTER FROM THE HOSPITAL

JINJA REGIONAL
REFERRAL HOSPITAL
P.O. BOX 43
JINJA

June 22, 2018

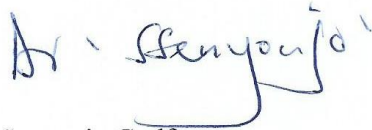
All Head of Department
Paediatrics
Jinja Regional Referral Hospital



Re: MWESIGWA KATEREGA JOSHUA

This is to introduce to you the above named student from Kampala International University. He has come to Jinja Regional Referral Hospital to do a research on *“Prevalence and Factors Associated with Diarrhoeal Diseases among Children Under the Age of Five Years Admitted in Paediatric Ward at Jinja Regional Referral Hospital”*.

Kindly assist him.



Dr. Senyonjo Godfrey

FOR: CHAIRMAN RESEARCH COMMITTEE

