FACTORS ASSOCIATED WITH DIARRHEAL DISEASE AMONG CHILDREN UNDER 5 YEARS ATTENDING OUT PATIENT DEPARTMENT CLINIC AT AGULE HEALTH CENTRE III PALLISA DISTRICT

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DECLARATION

I **Okurut John** hereby declare that this dissertation is my original work. Everything in, is as a result of my hard work and has never been produced or submitted in any other university, college or institution for the award of degree or diploma.

……. ……

Signature **Date**

OKURUT JOHN (AUTHOR).

APPROVAL

This is to certify that this dissertation was done under my supervision and i approve it for submission.

....

Signature **Date**

MR. TASHOBYA DANIEL KAMUGISHA

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Finally, I would like to thank my Dad (**MZEE ADAKUN EDWARD WILFRED**), my family and close friends and relatives for their support and encouragement throughout my studies.

DEDICATION

I dedicate this research dissertation to my family most especially my wife Stella Akia and children; Eddy, Ivan, John,Kevin and Melda for support, patience, love, and understanding during this long period of my being far away from them.

LIST OF ABBREVIATIONS

AGE	Acute Gastro Enteritis
ARI	Acute Respiratory Infection
HC	Health Centre
MOH	Ministry Of Health
OPD	Out Patient Department
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
UBOS	Uganda Bureau Of Statistics
UDHS	Uganda Demographic and Health Survey
UNICEF	United Nations International Children's Emergency Fund
VHT	Village Health Team
WHO	World Health Organization

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CHAPTER ONE

Introduction

This chapter looks at the background of the study, problem statement, general objective, specific objectives, research questions, significance and scope of the study.

1.1 Background

Diarrhea remains the leading cause of morbidity and mortality in children under 5 years old worldwide. The burden is disproportionately high among children in low- and middle-income countries. Young children are especially vulnerable to diarrheal disease and a high proportion of the deaths occur in the first 2 years of life. Worldwide, the majority of deaths related to diarrhea take place in Africa and South Asia. Nearly half of deaths from diarrhea among young children occur in Africa where diarrhea is the largest cause of death among children under 5 years old and a major cause of childhood illness(Black, 2012).

Although some of the factors associated with diarrhea in children in Uganda such as Acute Respiratory Infection (ARI), maternal history of recent diarrhea, maternal education, well source of water, obtaining water from storage container by dipping, availability of latrine facilities, living in a house with fewer number of rooms, not breast feeding, duration of breast feeding, and age of the child, have been identified, diarrhea is still a major public health problem among children under 5 years old(Desalegn, 2011).

Globally acute diarrheal disorder account for a large proportion (18%) of childhood deaths, with an approximately 1.8 million deaths per year. WHO suspects that there are more than 700 million diarrheal episodes per yearly in children under 5 years of age in developing countries. In US, there are 1.5 million outpatient visits for diarrheal disease, 200,000 hospitalizations, and 300 deaths yearly(Kliegman, 2010)

Diarrheal disease is much less common than in bottle-fed infants, but when they occur, the infant should be maintained on the breast if possible. Human milk is a physiologic solution that normally causes neither dehydration nor hypernatremia. Sometime mother's diet may be

cause diarrhea or intestinal upset in infant during breast feeding. To treatment these cases, mothers must continue to nurse at the breast (Lawrence, 2010).

Dehydration, electrolyte imbalance, and hypovolemic shock can occur if diarrhea is not treated. In infants and small children, it can be life threatening because fluid losses are not adequately replaced. Parents must understand that giving plain water alone is dangerous because it does not contain electrolytes. To rehydrate, the children especially infants, should be given oral rehydration solutions. ORS contains salt, water, and glucose can be absorbed through intestines (Mckinney, 2010).

Many diarrheal episodes in children under five years of age are caused by contaminated food or human or animal fecal waste through the fecal-oral route. Because of the seriousness of AGE in children under five years of age and the danger of spreading acute diarrhea, the child with moderate or severe diarrhea is often isolated until treated(WHO, 2010).

In developing countries, acute diarrhea is approximated to cause 1.5 million child deaths per year, mostly among children under five years of age. It is about 2.7 billion people without access to basic sanitation in 2015. Worldwide, 780 million peoples lack access to improved drinking water and 2.5 billion lack improved sanitation (Datta, 2010).

Due to high of lactose, a breastfed baby passes two to six times golden yellow, sticky, semi loose stools. Mother should be explained about the breastfed baby's stools. Diarrhea may be caused by intake of large quantities of glucose water or honey by baby, malpractices in preparing bottle feeding, over feeding, and serious under feeding also can cause diarrhea in the neonates(MCIntosh, 2010)

Mild and moderate diarrhea can be treated at home by their family by using ORT but where dehydration is more severe, there's need for hospitalizations to treat the dehydration; IV therapy is often used in the management(Al-Rawaz, 2008).

In Uganda, diarrhea accounts for 75% of all out patient cases of children treatments and about 52% of all child admissions in child clinics. A study on Kashenyi, Mugungu, Masyoro fishing sites on Lake George in 2006 on management of childhood diarrhea and vomiting, 107 of the

200 children recruited in the study at least had either diarrhea or vomiting with 17% having bloody stool diarrhea(UDHS, 2006).

Little literature is available about child diarrhea in Agule sub county Pallisa district where the study area is located.

1.2. Problem Statement

Diarrhea is a very big global public health problem, but is especially prevalent in developing countries in conditions of poor environmental sanitation, inadequate water supplies, and limited education(Boschi-Pinto, 2008). Environmental factors include;- source of water, water treatment, latrine availability, latrine ownership, waste water disposal, refuse disposal, sharing houses with domestic animals, and open air adult members' defecation. Diarrheal disease due to unsafe water and lack of sanitation are the biggest cause of morbidity and mortality in under-five children in the world especially in poor countries(Woldemicae, 2007). Water sources and sanitation facilities have an important influence on the health of household members, especially children. Water safety in a community at large and household levels depends on a range of factors to prevent childhood diarrhea, the quality from water sources to storage, throwing away or disposal of feces, point of use of household water treatment, washing of containers before transferring, duration of stored water, cover of container during transportation and storage, unhygienic water drinking and handling in the domestic setting (Pruss-Ustun A, 2009).

The consequences of diarrheal diseases on childhood are huge; leading to decreased food intake and nutrients' mal-absorption, malnutrition, reduced resistance to infection, and impaired physical growth and cognitive development(Lantegne, 2009).

It is a well-known fact that diarrhea is a disease burden in Uganda. About 81% of Ugandan children are taken to health care facilities and are diagnosed with diarrhea each year (UDHS, 2006). In 2003 alone, 72.7% of the children admitted at acute care unit in Mulago National Referral Hospital, had diarrhea(Tumwine, 2011).

According to the Uganda Bureau of Statistics (UBOS) and Uganda Demographic Health Survey(UDHS, 2012), 17% of Places with poor sanitation and unprotected water systems and slums are challenged with fecal-oral infections due to poor waste disposal and Agule sub-county

is no exception. High cost of tap water at UGX 200–300 a jerry can, forces families to resort to underground unprotected wells that are highly susceptible to contamination. Noted is that, there is low latrine coverage in Agule sub county because most “landlords” prefer building semi-permanent houses without latrines due to lack of space and high demand for accommodation. Furthermore, some landlords do not build latrines because it’s costly to build them in Agule sub-county hence predisposition to improper excreta disposal.

In view of all these current discrepancies, there is need to assess parents' knowledge, attitude and practices because they dominantly influence their practices in the prevention of diarrheal disease; which preventive measures can greatly reduce the incidences of the disease episodes and therefore a reason i opted to conduct this study at Agule H/CIII.

1.3 General objective

To identify the factors associated with diarrheal disease among children under five years attending OPD clinic at Agule HC III, Pallisa district.

1.4 Specific Objectives

- To assess demographic and socio-economic, household environmental health conditions and behavioral factors associated with diarrheal disease among children under five years attending OPD clinic at Agule HC III, Agule sub-county, Pallisa district.
- To find out measures taken to prevent occurrence of diarrheal disease among children under five years attending OPD clinic at Agule HC III, Pallisa district.
- To identify the major causes of diarrheal in children under five years attending OPD clinic at Agule H/CIII.

1.5 Research questions

The study was sought to answer the following questions:

i. What are the demographic and socio-economic, household environmental health conditions and behavioral factors associated with diarrheal disease among children under five years attending OPD clinic at Agule HC III, Pallisa district?
ii. Which measures are taken to prevent occurrence of diarrheal disease among children under five years attending OPD clinic at Agule HC III, Pallisa district?

iii. What are the major causes of diarrhea in children under five years attending OPD clinic at Agule H/CIII?

1.6 Significance of the study

The study was sought to investigate factors associated with diarrheal disease, and measures taken at home to prevent its occurrence among children under five years attending OPD at Agule HC III. This study therefore, generated information on factors associated with diarrheal disease among children under five years. Such information will be used to inform local leaders, health care providers and the community at large to develop interventions aimed at reducing its occurrence through specific interventions.

Through recommendations from this study, suggestions to policy makers were made for them to put in place better policies to see that the incidence and prevalence of diarrhea reduces.

Findings of the study were to highlight what communities need in terms of information on diarrhea, health policies, services in terms of drainage, access to water, and disposal areas.

This study was conceived on the concept of prevention. Preventive measures practiced properly can in the long run reduce on the incidence of diarrheal disease among children under five. The disease reduces the quality of life of the children as well as brings about complications such as dehydration and malnutrition.

1.7 Scope of the Study

1.7.1 Geographic scope

The study was conducted at Agule H/CIII, Pallisa district in all children under five years attending OPD clinic.

1.7.2 Content scope

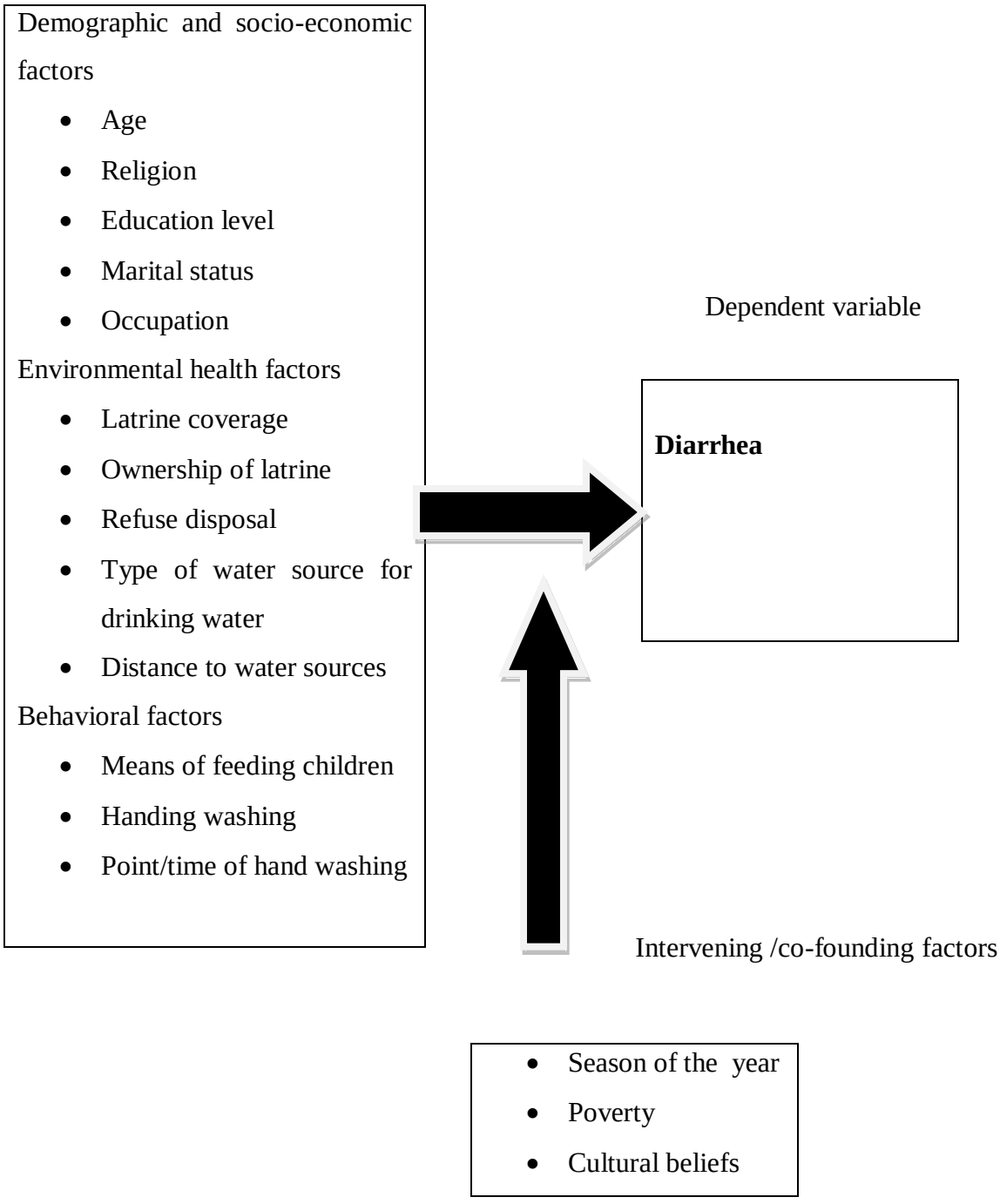
The study looked at the factors associated with diarrheal disease in children under five years, measures taken to prevent occurrence the diarrheal disease in under fives and major causes of diarrheal disease in all under fives attending OPD clinic at Agule H/CIII.

1.7.3 Time scope

The study was conducted between February to May 2017; at Agule H/CIII, Pallisa district

1.8 Conceptual framework

Independent variables



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed literature on parents' knowledge, attitudes and practices on factors contributing to diarrheal disease among children less than 5 years, preventive measures and causes of diarrhea. Here, there shall be exploration of the existing studies to provide information on the research topic. The literature review will be guided by literature related to the objectives of this study.

2.1 Factors associated with diarrheal disease among children under five years.

Demographic factors: Many studies have established that the diarrhea prevalence is higher in younger children, 6-11 months, boys than girls.

Socio-economic factors: Some studies have shown that the association between socio-economic factors, such as poor housing, crowded condition and low income(Molbak, 2010a).

Water-related factors: As diarrhea is acquired via contaminated water and foods, water-related factors are very important determinants of diarrhea occurrence. Increased distance from water sources, poor storage of drinking water, obtaining water from storage containers by dipping, no drinking water storage facilities, use of unsafe water sources (such as rivers, pools, dams, lakes, streams, wells and other surface water sources)(Beleke, 2010).

Sanitation factors: Sanitation plays a key role in reducing diarrhea morbidity. Some sanitation factors, like indiscriminate or improper disposal of children's stool and household garbage no existence of latrine or unhygienic toilet, sharing latrine, increase the risk for diarrhea in children (Aulia et al, 2011).

Hygiene practices: Some studies have revealed that children not washing hand before meals or after defecation, mothers not washing hands before feeding children or preparing food, children eating with their hands rather than with spoons, eating of cold leftovers, dirty feeding bottles and utensils, unhygienic domestic places were associated with risk of diarrhea morbidity in children(Tumwine, 2011).

Breastfeeding: In general, the morbidity of diarrhea is lowest in exclusively breast-fed children; it is higher in partially breast-fed children, and highest in fully-weaned children(Molbak, 2010).

Malnutrition: Diarrhea, especially persistent and chronic diarrhea, undermines nutritional status, resulting in mal-absorption of nutrients or the inability to use nutrients properly to maintain health. A tendency of increased incidence of diarrhea was also found in children with low weight-for-age, or, in particular, in stunted children (Molbak, 2010).

Immunodeficiency: HIV positive patients are vulnerable to pathogens that cause infectious diseases including diarrhea. Diarrhea is reported in up to 60% of patients with AIDS (Kosek M, 2012).

Seasonal distribution: Seasonal patterns to childhood diarrhea have been noted in the summer with bacterial infections, and the winter viruses related (Grace, 2006).

Consumption of food sold by street vendors: Tourists visiting foreign countries with warm climates and poor sanitation can acquire diarrhea by eating contaminated foods such as fruits, vegetables, seafood, raw meat, water, and ice cubes(Banerjee, 2011).

Eating habits: Eating with the hands; eating raw foods; or drinking un boiled water, may increase the risk of diarrhea (Warren, 2010)

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2.2 Measures taken to prevent diarrheal disease among children under 5 years.

The preventive practices according to WHO include; breast feeding, improved weaning, use of plenty of water for hygiene and clean water for drinking, hand washing, use of latrines, proper disposal of the stools of young children and immunization against measles, exclusive breast feeding during the first 4- 6 months greatly reduces the risk of severe or fatal diarrhea and the risk of other serious infections are also reduced.

Prevention of diarrhea in children can take place if caregivers practice preventive practices. However, in a study conducted in Santo Domingo, Dominican Republic, revealed that 55% of caregivers did not boil water for their children, 38% did not always wash hands of their children prior to meals and 54% of the caregivers breastfed their children for less than a year.

Furthermore, 46% of the caregivers reported that one of the children had got diarrhea in the last months.

WHO further stated that stools of young children should be collected quickly, wrapped in a leaf or newspaper and buried or put into the latrine; or helping a young child to defecate into an easily cleaned container, which should then be put into a latrine and the container washed out or a child who has defecated should be cleaned properly, the child's hands washed and the person who has cleaned the child should also wash his or her hands thoroughly (WHO, 2010)

Prevention, is better than cure; therefore, children should be immunized against measles at nine months of age. Measles' vaccine given at this recommended age can prevent up to 25 per cent of diarrhea associated deaths in children under five years of age. (WHO, 2000)

2.3 Causes of diarrhea

Though most diarrheal episodes are due to errors of metabolism, chemical irritation or organic disturbance, the vast majority are caused by infectious pathogens (Grace, 2006)

Bacterial infections: Diarrhea among the under-fives is caused by a range of causative microorganisms which include; E. coli, Salmonella, Shigella, Campylobacter, Yersinia, vibrios and Clostridium difficile(Banerjee, 2011)

Viral infections: Rotavirus is one of the most common causes of severe diarrhea. Other viruses include; Norwalk virus, adenoviruses, caliciviruses, and astroviruses(Banerjee, 2011)**Parasites:** Ingested through food or water and settle in the digestive tract and include Giardia lamblia, Entamoebahistolytica, and Cryptosporidium.

Food intolerances: Some people are unable to digest some component of food, such as lactose - the sugar found in milk, or gluten found in wheat and barley.

Reaction to medicines: some antibiotics such as clindamycin, cephalosporin, sulfonamide, laxatives and antacids are known to cause diarrhea in children

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter described the study area focused on Geographical location, population structure and many other aspects including Study design, sample size determination, sampling method, selection criteria, data Collection, data analysis, data presentation, data quality control, study limitation and Ethical consideration.

3.1 Study area

The study was carried out at Agule health center III located in Agule sub-county, Pallisa district. Pallisa is a district in Eastern Uganda which had the sub-counties of; Olok, Apopong, Kasodo, Kameke, Gogonyo, Akisim, Pallisa Town council ,Chelekura, Kamuge and among others but Agule health center III also served people from other sub counties in Pallisa district.

Pallisadistrict bordersSerere, Ngora and Kumi district to the north, Kaliro district to the west, Kibuku to the south, Budaka to the southwest and Mbale district to the East.

Pallisa is located at 01 01N, 33 43E coordinates and is 65km West of Mbale the largest town in the Eastern sub region.

3.2 Study design

A descriptive cross sectional study was used for children under five years who attended OPD clinic at Agule health centre III, Pallisa district.

3.3 Sample Size determination

The sample size was determined using Fishers *et al,* 2003 formula .The formula was used to estimate the smallest possible categorical sample size of the population of children who attended OPD clinic at Agule HCIII.

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

Where

n= minimum sample size

d = margin of error

z=standard normal deviation corresponding to 1.96

p= prevalence of diarrhea.

q=1-p

Therefore taking

p = 26/100 (UDHS, 2006).

z = 1.96

q=1-p = 0.74

d= 5% or 0.05

$$n=\frac{1.96^2 X 0.26 X 0.74}{0.05^2}$$

= 296

NOTE: Because of limited resources, a half of value of n was used in the study. Thus, the sample size used was 148.

n=148 mothers with children who presented with diarrheal disease.

3.4 Study population

The study was done in all children under five years who attended OPD clinic at Agule health centre III.

3.5 The sampling method

The study was carried out among parents with children under five at Agule health center III , a total of 148 parents of these children were considered and using a random sampling method; where all those parents with children who presented with diarrheal disease were considered to have provided relevant information on behalf of the children.

3.6 Inclusion

The study included all parents with children under five years of age; all children under five years of intended target population whose caretakers accepted to give consent, parents and caretakers of children under five years of age attending OPD at Agule HC III.

3.7 Exclusion criteria

Children above five years of age, those who had emergency medical conditions, parents and caretakers of children who refused to give consent were excluded.

3.8 Data collection method

The data was collected using both open and closed ended structured questionnaires about socio-demographic and other characteristics (appendix 1), I collected the data together with my other

three research assistants. The questionnaires were filled by asking the parents or caregivers already pre-determined questions on the questionnaires. The variables of interest included age, sex, education, occupation, marital status, income and occupation. Others included; hygiene and sanitation practices, water related factors, exposure to infective pathogens were captured by the questionnaire.

3.9 Data Analysis and presentation

The data collected from the study was computed using Microsoft excel. The analysis was made in line with the study objectives and presented inform of tables, pie-chart, bar-graph, and narratives depending on the data analyzed.

3.10 Study limitations

Financial constraints because data collection required transport, stationary and facilitation for the research assistants

3.11 Data quality control

For quality control, a one day training for the three research assistants was conducted; there-after i sent them for field testing of the study tools. I distributed a total of six questionnaires to the research assistants (2 questionnaires each) for the pre-test. I closely supervised the research assistants during this activity.

3.12 Ethical Consideration

The study was carried out after the approval of the proposal by the university.

An Introductory Letter from the Administrator school of Allied health sciences was obtained. Permission from the in-charge Agule HC III was sought through presentation of that introductory letter and verbal informed consent.

Respondents were requested for their consent prior to the interviews.

Confidentiality was maintained all through the research process and the interviews were conducted in a private room to ensure privacy, codes known to individual respondents were used other than names and ensured not to disclose their information to third parties without their consent.

CHAPTER FOUR

4.0: Study findings

4.1: Demographic and socio-economic characteristics

Table 1: Demographic and Socio- economic characteristics of parents/caregivers and children with diarrheal disease who attended OPD clinic at Agule H/CIII from April 25th,2017 to May 25th 2017.

The primary caregivers in the household were mothers (68.9%), followed by fathers(27.0%),Aunts (2,70%),Others (1.35%); Caregivers/parents below 30 years were 5.40%, 30-45 years(81.0%), above 45 years (13.5%); Moslems(0.67%),Traditional (0%), Christians (91.2%), Others (8.10%);Secondary level (13.51%), Primary (34.45%), Tertiary (6.08%), None (45.94%); Single (4.725), Separated/Divorced (13.5%), Married (66.89%), Widows (14.86%), Housewives (59.45%), Students (2.02%), Businessmen/Women (35.13%),Employed (1.35%), Others (2.02%); Children below 1 year were (21.62%), 1-2 years(27.02%), 2-5 years (51.35%)

Table 1:

VARIABLE	FREQUENCY	PERCENTAGE
Primary caregiver in the household:		
Mother	102	68.9%
Father	40	27.0%
Aunt	04	2.70%
Other	02	1.35%
TOTAL	**148**	**100%**
Age of parents/caregiver:		
Below 30years	08	5.40%
30-45 years	120	81.0%

Above 45 years	20	13.5%
TOTAL	**148**	**1OO%**
Religion:		
Moslems	01	0.67%
Traditional	00	0%
Christians	135	91,2%
Others	12	8.10%
TOTAL	**148**	**100%**
Level of education:		
Secondary	20	13.51%
Primary	51	34.45%
Tertiary	09	6.08%
None	68	45.94%
TOTAL	**148**	**100%**
Marital status:		
Single	7	4.72%
Separated/Divorced	20	13.13%
Married	99	66.89%
Widow	22	14.86%
TOTAL	**148**	**100%**

Occupation:		
Housewives	88	59.45%
Students	03	2.02%
Businessmen/women	52	35.13%
Employed	02	1.35%
Others	*03*	*2.02%*
T0TAL	***148***	***100%***
Age of children:		
Below 1 year	32	21.62%
1-2 years	40	27.02%
2-5 years	76	51.35%
TOTAL	**148**	**100%**

4:2 Household environmental health conditions

Table 2: Household environmental health conditions that led to diarrheal disease among children below five years who attended OPD clinic at Agule H/CIII, Pallisa.

Those who had latrines (62.16%), bush (33.78%), others (4.05%); privately owned latrines (34.78%), shared with neighbors (65.21%); those with pits (13.51%), open field (7.43%), burning (54.05%), garbage bins (0.67%), others (42.56%); those who took minutes to reach water source (36.48%), hours (63.51%); used hands to feed children (22.29%), cups and spoons (13.51%), cups (9.45%), bottles (47.97%), others (6.75%)

Table 2

VARIABLES	**Number of respondents**	**Percentage**
Where they go to ease:		
Latrine	92	62.16%
Bush	50	33.78%
Others	06	4.05%
TOTAL	**148**	**100%**
Ownership of latrine:		
Privately owned	32	34.78%
Shared with neighbors	60	65.21%
T0TAL	**92**	**100%**
Refuse disposal:		
Pit	20	13.51%
Open field	11	7.43%
Burning	80	54.05%

Garbage bin	01	0.67%
Other	36	42.56%
T0TAL	**148**	**100%**
Where they collected drinking water from:		
Borehole	61	41.21%
Protected well	02	1.35%
Protected Spring	00	0%
Others	85	57.43%
TOTAL	**148**	**100%**
Distance to water source:		
Minutes	54	36.48%
Hours	94	63.51%
What was used to feed the children:		
Hand	33	22.29%
Cup and spoon	20	13.51%
Cup	14	9.45%
Bottle	71	47.97%
Other	10	6.75%
TOTAL	**148**	**100%**

4.3:Behavioural aspects

Table 3: Behaviourial aspects that contributed to diarrheal disease among children under five years who attended OPD clinic at Agule H/CIII ,Pallisa district.

Those who washed hands before food preparation were 54.72%, after cleaning children's bottoms (27.02%), after visiting latrine (14.86%), others (3.37%); those who washed hands with soap and water (8.10%), Ash and water (1.35%), Only water (81.75%), Others (8.78%).

Table 3

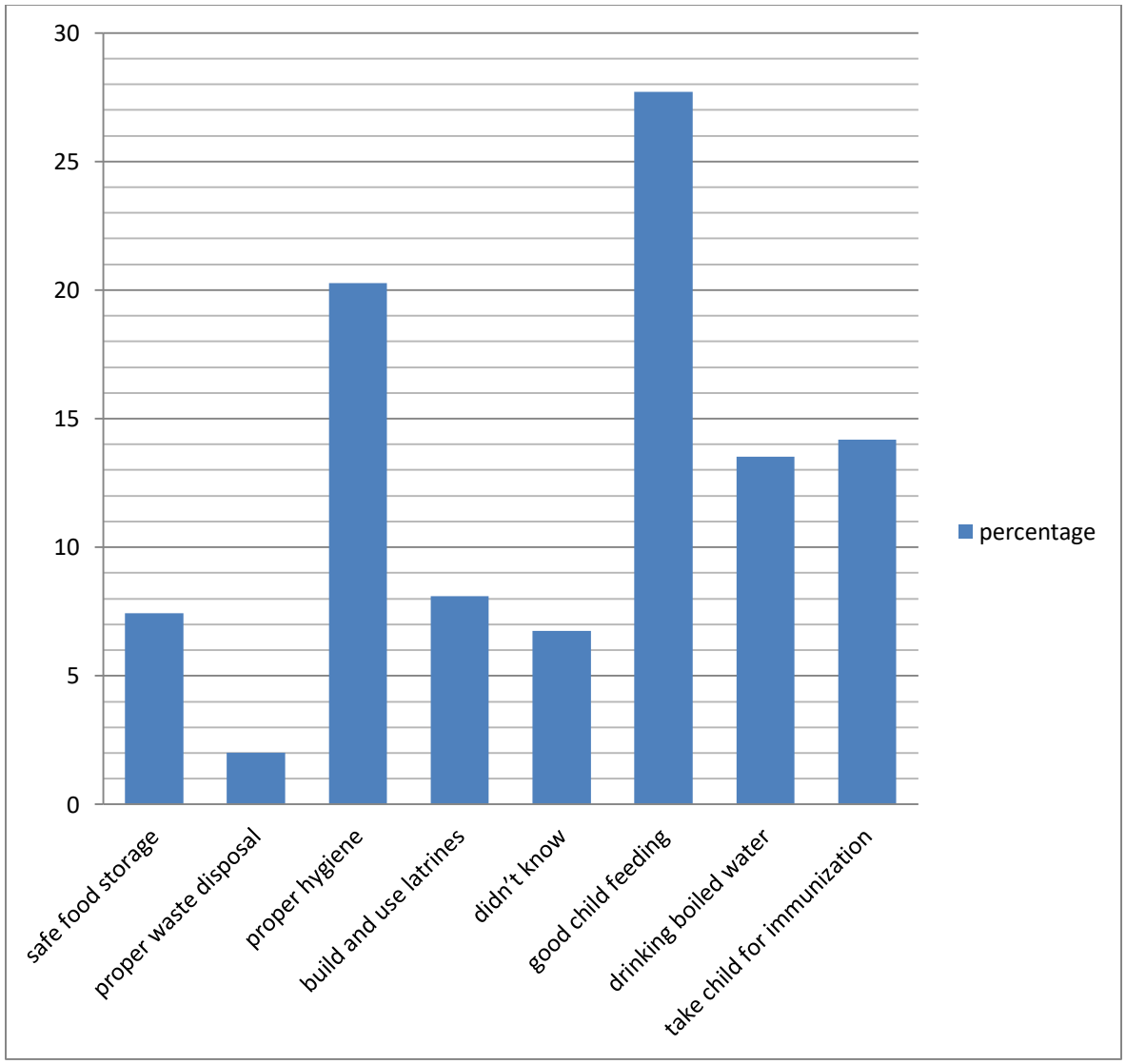
VARIABLES	NUMBER OF RESPONDENTS	PERCENTAGE
Point/time at which hands were washed:		
Before food preparation and eating	81	54.72
After cleaning children's bottoms	40	27.02%
After visiting latrine	22	14.86%
Others	05	3.37%
TOTAL	**148**	**100%**
What was used to wash hands:		
Soap and water	12	8.10%
Ash and water	02	1.35%
Only water	121	81.75%
Other	**13**	**8.78%**
TOTAL	**148**	**100%**

4.4: Measures taken to prevent occurrence of diarrheal disease among children.

Figure 1: Measures that parents/caregivers took to prevent the ocurrence of diarrheal disease among children under five years who attended OPD clinic at Agule H/CIII between April 25th,2017 and May 25th,2017.

Take a child for immunization (14.18%), Drinking boiled water (13.51%), Safe food storage (7.43%), proper waste disposal (2.02%), proper personal hygiene (20.27%), building more and use latrines (8.10%), good child feeding (27.70%), Didn't know (6.75%).

Figure 1

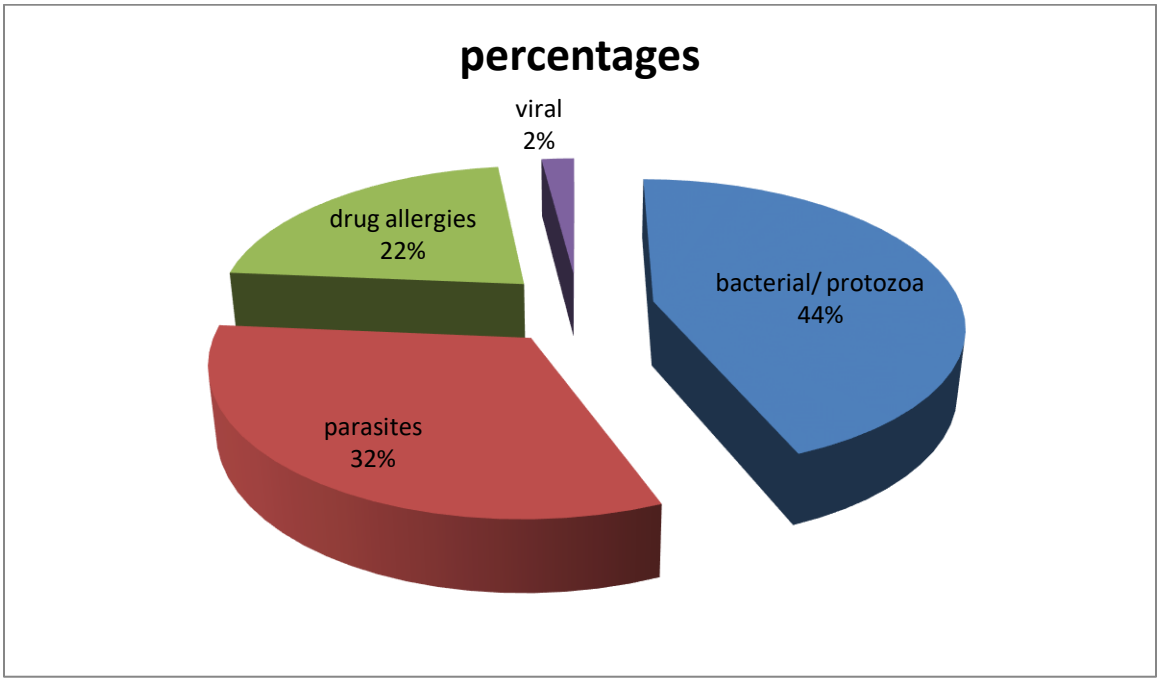


4.5: Causes of diarrhea among children

Figure 2: The figure below shows the causes of diarrheal disease among children under five years attending OPD clinic at Agule H/CIII ,Pallisa district from April 25th 2017 to May 25th 2017.

Bacterial or protozoa were the leading cause (43.91%), followed by parasites (32.43%), drug allergies (21.62%), viral (2.02%).

Figure 2



CHAPTER FIVE

5.0: Discussion

Diarrhea remains a threatening public problem to resource limited and poor communities in majorly developing countries where our country Uganda is unexceptional.

In the current study ,the majority of the children with diarrheal disease were aged 2-5 years (51.35%), 1-2 years (27.02%), below 1 year (21.62%) and 68% of them were females ,32% were males.

In this study, it also identified that 81% of the parents/caregivers were aged between 30-40 years; constituted the biggest percentage compared to below 30 years (5.40%) and those above 45 years with 13.5%. Compared to other researches, direct influence of age on diarrheal disease among children under 5 years has not been studied; for reasons not known.

In the study carried out by Aulia et al, Brooks JT at al (2009), the study indicated that sanitation factors such as indiscriminate disposal of children' stool, lack of latrines, sharing latrines increase the risk of diarrhea in children. In the current study, 33.7% used bush to ease themselves and 65.2% were sharing latrines with their neighbors.

Diarrhea has remained a very big health problem in this geographic site; in that the level of education is low, stands at 45.9% (non-educated), tertiary 6.05%, primary 34.4% and secondary 13.5%.

However, the demographic and socio- economic factors such as age, education, marital status, occupation, sex and religion have indirect influence on diarrheal disease in children below years.

In the study conducted in Santo Dominica Republic, revealed that 55% of the caregivers did not boil water for their children; a small figure compared to 86.4% of the caregivers who did not boil water for their children as per this research.

Prevention, is better than cure, therefore children who are immunized against measles at nine months of age have lesser chances of suffering from diarrheal disease. Measles' vaccine at this recommended age can prevent up to 25% of diarrhea associated with morbidity and mortality in children under five years (WHO, 2010). According this current research, only 14.18% of the caregivers were aware of the importance of immunization on prevention diarrhea in children. This is because of low literacy level among the caregivers and religious attributions to immunization; 91.2% are Christians with different sub groups there in.

According to Banerjee B et al (2011), diarrhea among under fives is caused a wide range of bacteria like E.coli, shigella, clostridium, vibriosetc; and Viruses such as rotavirus,Norwalk,

adenovirus (Banerjee B et al, 2004) but the current study reveals that 43.91% of diarrhea cases in children under five years were caused by bacteria and protozoa, followed by parasites (32.43%), viruses (21.62%), and lastly drug allergies accounting for 2.02% of the cases.

5.1: CONCLUSION:

Diarrheal disease among children below five years is significantly dependent on the level of education, availability of latrines and proper disposal of refuse that contribute to the occurrence of diarrhea. This study would therefore be important to the district medical and environmental health team in planning and laying strategies for managing diarrhea in children under five years. Diarrhea has proved to be a major burden in children under five years attending OPD clinic at Agule H/CIII.

5.2: RECOMMENDATIONS

Therefore, from the observations made in the study, parents and caregivers of these children should be health educated on various ways of controlling diarrhea at household level; this should be done by VHTs and environmental health assistants through home to home visits. Proper diagnosis adequate and correct treatment are some of the interventions that could be emphasized in the control and prevention of diarrhea in children. The concerned authorities should protect wells and springs for communities to use clean water at their homes.

Lastly, the local authorities should implement the public health act; for example those without latrines be charged for statutory nuisances.

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APPENDIX I

PART A: Demographic and socio-economic characteristics

Circle the mentioned alternative using a pencil

Primary caregiver in this household

1. Mother

2. Father

3. Aunt

4. Other Relative (specify)

Age

1. Below 30 years
2. 30 to 45 years
3. Above 45 years

Religion

1. Moslem

2. Traditional

3. Christian

4. Other

Level of education

1. None

2. Secondary

3. Primary

4. Tertiary

Marital Status

1. Single

2. Separated / Divorced

3. Married

4. Widow

Currently what do you do to earn a living? (Occupation)

1. Housewife

2. Student

3. Business man/woman

4. Employed

5. Other (specify)

Age of the child

1. Below 1 year

2. 1 to 2 years

3. 2 to 5 years

PART B: Household environmental health conditions

Where do you go when you want to ease?

1.Latrine

2. Bush

3. Others (specify)

Ownership of the latrine

1. Privately owned

2. Shared with neighbour

If the family has no latrine, where do you dispose human waste?

1. Open field

2. Other (specify)

Where do you dispose refuse at your home?

A. Pit

B. Open field

C. Burning

D. Garbage can

E. Other (specify)

Where do you collect your drinking water from?

1. Borehole

2. Protected well

3. Protected spring

4. Others (specify)

Distance from the home to the water source

1. Minutes

2. Hours

What do use for feeding your baby?

1.Hands

2.Cup and spoon

3.Cup

4.Bottle

5.Other

PART C: Behavioural aspects

At what point/time do you wash your hands?

1. Before food preparation and eating

2. After cleaning of child bottom

3. After visiting latrine

5. Others

What do you use to wash your hands?

1. Soap & water

2. Ash & water

3. Only water

PART D: Measures taken to prevent occurrence of diarrhoeal disease among children under five years

In your view, what practices have you taken to prevent occurrence of diarrheal disease among children?

Safe food storage…….

Proper waste disposal……..

Proper personal hygiene…….

Build more and use latrines……

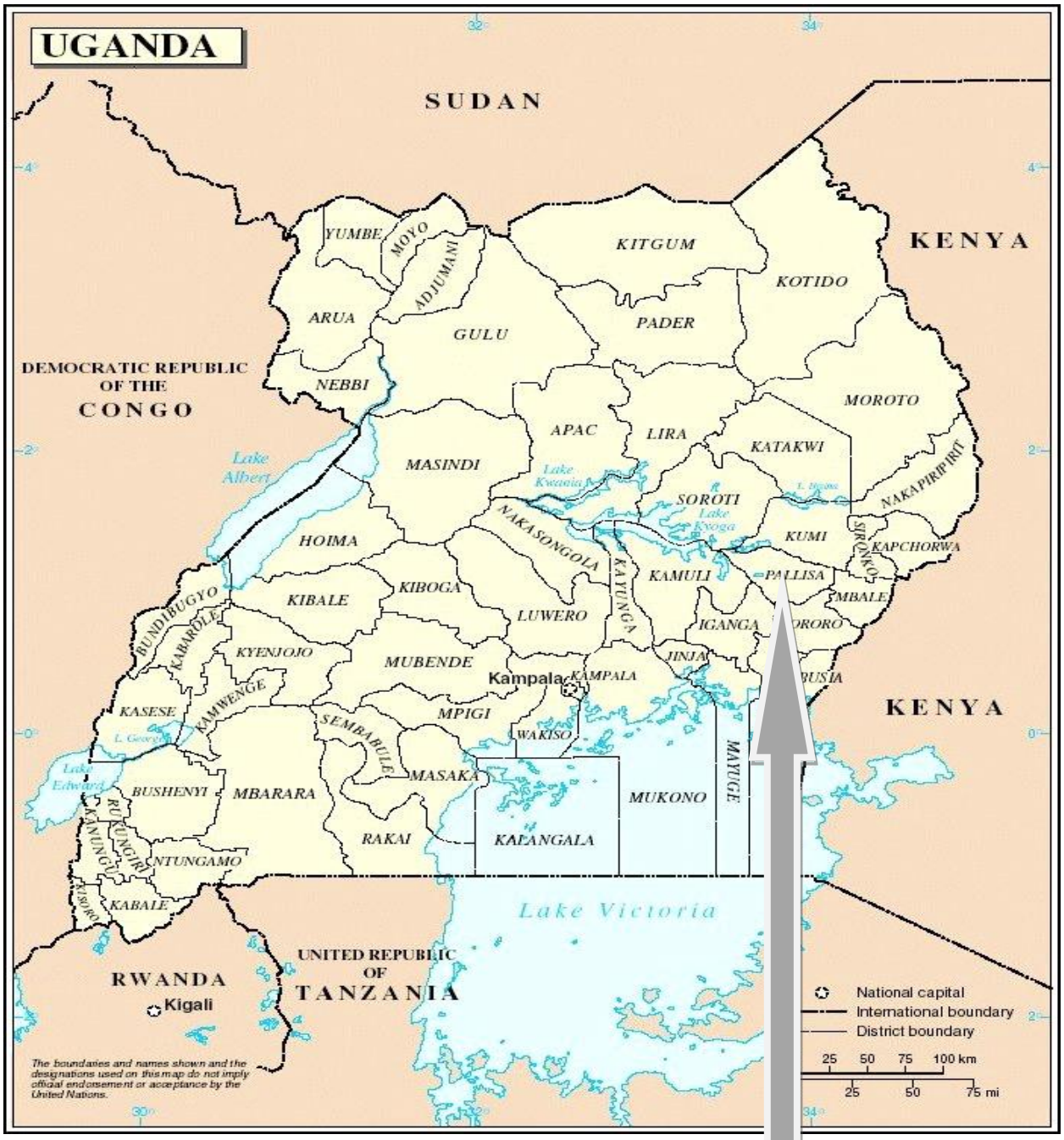
Good child feeding…….

Drinking boiled water……..

Take child for immunization…….

Don't know…

APPENDIX II: **MAP OF UGANDA SHOWING THE LOCATION OF PALLISA DISTRICT**



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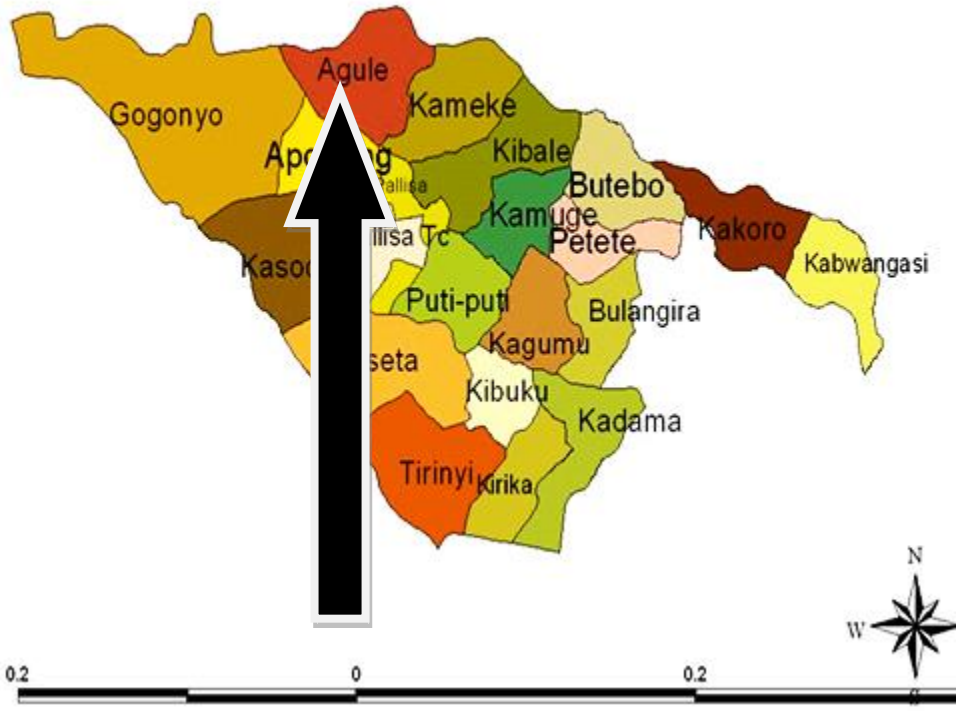
APPENDIX I1I: MAP OF PALLISA DISTRICT SHOWING THE LOCATION OF AGULE SUB COUNTY (AGULE H/CIII)



APPENDIX IV:

KAMPALA INTERNATIONAL UNIVERSITY
EXPLORING THE HEIGHTS
TEACHING HOSPITAL

School of Allied Health Sciences (SAHS) Ishaka,
P.O.BOX 71 Bushenyi,
Tel: 0703786082/0773786082
Email:christinekyobuhaire@gmail.com

OFFICE OF THE ADMINISTRATOR –SAHS

AGULE HEALTH CENTRE 111
P.O. BOX 14 PALLISA
DATE 26/4/2017
Granted Permission to collect data.

25th April 2017

The Incharge Agule H/C III

Dear Sir/Madam,

SUBJECT: DATA COLLECTION

Academic research project is an Academic requirement of every student pursuing a 3 year Diploma in Clinical Medicine & Community Health (DCM) of Kampala International University- Western Campus (KIU-WC). DCM program is housed in the School of Allied Health Sciences (SAHS).
The students have so far obtained skills in Proposal writing especially chapter one, Three & Questionnaire design. The student's topic has been approved by SAHS Research Unit and is therefore permitted to go for data collection alongside full proposal & dissertation writing. As you may discover the student is in the process of full proposal development. However, the student MUST present to you his questionnaire and his research specific objectives that he wishes to address. We as academic staff of Allied Health Sciences are extremely grateful for your support in training the young generation of Health Professionals. I therefore humbly request you to receive and allow the student **OKURUT JOHN** Reg. No. **DCM/0045/143/DU** in your health facility to carry out his research. His topic is hereby attached. Again we are very grateful for your matchless support and cooperation.
Topic: **FACTORS ASSOCIATED WITH DIARRHEAL DISEASE AMONG CHILDREN UNDER 5 YEARS ATTENDING OPD CLINIC AT AGULE HEALTH CENTRE III, PALLISA DISTRICT**.

Sincerely yours,

25 APR 2017

Christine Kyobuhaire, Administrator- SAHS
CC: Dean SAHs
CC: Associate Dean SAHs
CC: Coordinator, Research Unit- SAHS
CC: H.O.D Dept. Public Health
CC: H.O.D Laboratory Sciences

"Exploring the Heights"