**Name: Kuyu Michael Pidi**

**Course: Diploma in Water, Sanitation and Hygiene (WASH)**

**Year: 2018-2019**

**Admission number: ACPMDIP/077/2018**

**Research Proposal and Report**

**EFFECT OF SANITATION ON CHILD HEALTH: CASE STUDY OF YEI RIVER STATE, SOUTH SUDAN**

**BY**

**KUYU MICHAEL PIDI**

**AN RESEARCH REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DIPLOMA IN WATER SANITATION AND HYGIENE TO THE AFRICA INSTITUTE FOR PROJECT**

**MANAGEMENT STUDIES**

**JUNE 2019**

# DECLARATION

**Declaration by the Student**

This research report is my original work and has not been presented to any other examination body. No part of this research should be reproduced without my consent or that of the Africa Institute for Project Management Studies.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_

**Declaration of the Supervisor/Lecturer**

This research report has been submitted for defense with my approval as the Africa Institute for Project Management Studies Supervisor.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_

**Lecturer Supervising**

# DEDICATION

I sincerely dedicate this research report to my entire family for their encouragement and support both financially and morally, God’s love for you shall endure forever.

# ACKNOWLEDGEMENT

First and foremost, praise be to God for providing me with fullness of life and wellbeing that enabled me finish my course.

Special thanks go to my supervisor who sacrificed his time and provided me with his professional guidance indeed her criticism and parental approach made my research a success.

I appreciate the efforts, encouragement advice and assistance rendered by my family members and relatives, friends and course mates. May God bless you all!

# TABLE OF CONTENTS

[DECLARATION ii](#_Toc11837672)

[DEDICATION iii](#_Toc11837673)

[ACKNOWLEDGEMENT iv](#_Toc11837674)

[TABLE OF CONTENTS v](#_Toc11837675)

[LIST OF TABLES vii](#_Toc11837676)

[LIST OF FIGURES viii](#_Toc11837677)

[LIST OF ACRONYMS ix](#_Toc11837678)

[OPERATIONAL DEFINITIONS x](#_Toc11837679)

[**CHAPTER ONE**](#_Toc11837680)

[**INTRODUCTION OF THE STUDY**](#_Toc11837681)

[1.1. Introduction 1](#_Toc11837682)

[1.2 Background of the study 1](#_Toc11837683)

[1.3 Statement of the Problem 4](#_Toc11837684)

[1.4 Objectives of the Study 4](#_Toc11837685)

[1.5 Research Questions 5](#_Toc11837686)

[1.6 Significance of the Study 5](#_Toc11837687)

[1.7 Limitation of the Study 5](#_Toc11837688)

[1.8 Scope of the study 6](#_Toc11837689)

[**CHAPTER TWO**](#_Toc11837690)

[**LITERATURE REVIEW**](#_Toc11837691)

[2.1 Introduction 7](#_Toc11837692)

[2.2 Review of Theoretical Literature 7](#_Toc11837693)

[2.3 Review of Critical Literature 13](#_Toc11837694)

[2.4 Summary of Gaps to be filled 14](#_Toc11837695)

[2.5 Conceptual Framework 14](#_Toc11837696)

[**CHAPTER THREE**](#_Toc11837697)

[**METHODOLOGY**](#_Toc11837698)

[3.0 Introduction 15](#_Toc11837699)

[3.1 Research Design 15](#_Toc11837700)

[3.2. Study Area 15](#_Toc11837701)

[3.3 Study Population 16](#_Toc11837702)

[3.4 Sample size 16](#_Toc11837704)

[3.5 Sampling methods 17](#_Toc11837706)

[3.6 Sources of Data 18](#_Toc11837707)

[3.7 Data Collection Instruments 18](#_Toc11837708)

[3.8 Quality control of instrument 19](#_Toc11837709)

[3.9. Data analysis 19](#_Toc11837710)

[**CHAPTER FOUR**](#_Toc11837711)

[**DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS**](#_Toc11837712)

[4.1 Introduction 21](#_Toc11837713)

[4.2 Presentation of Findings 21](#_Toc11837714)

[**CHAPTER FIVE**](#_Toc11837726)

[**SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**](#_Toc11837727)

[5.0. Introduction 30](#_Toc11837728)

[5.1 Summary of Findings 30](#_Toc11837729)

[5.2. Conclusion 31](#_Toc11837730)

[5.3. Recommendations 31](#_Toc11837731)

[5.4. Areas for further studies 31](#_Toc11837732)

[**REFERENCES** **32**](#_Toc11837733)

[APPENDICES 34](#_Toc11837734)

[APPENDEX I: QUESTIONNAIRE 34](#_Toc11837735)

# LIST OF TABLES

[Table 3.1 Target Population 16](#_Toc11837703)

[Table 3.2: Sample Size 17](#_Toc11837705)

[Table 4.1 Response Rate 21](#_Toc11837715)

[Table 4.2: Showing Gender of Respondents 22](#_Toc11837717)

[Table 4.3: Showing Age range of Respondents 23](#_Toc11837719)

[Table 4.4: Showing Education of Respondents 24](#_Toc11837721)

[Table 4.5: Factors Contributing to Poor Sanitation Practices i. 25](#_Toc11837723)

[Table 4.6: How Sanitation Practices affect Children’s Health 27](#_Toc11837724)

[Table 4.7: Strategies that could be employed to enhance Sanitation Practices among Children. 28](#_Toc11837725)

# LIST OF FIGURES

[Figure 4.1: Response Rate 21](#_Toc11837716)

[Figure 4.2: Showing Gender of Respondents 22](#_Toc11837718)

[Figure 4.3: ShowingAge range of Respondents 23](#_Toc11837720)

[Figure 4.4: Showing Level of educationof Respondents 24](#_Toc11837722)

# LIST OF ACRONYMS

BMJ British Medical Journal

CBOs Community Based Organisations

DALY Disability Adjusted Life Year

IMCI Integrated Management of childhood Illnesses

NGOs Non-Governmental Organisations

UK United Kingdom

UN United Nations

UNICEF United Nations Integrated Children’s Emergency Fund

USA United States of America

WHO The World Health Organization

# OPERATIONAL DEFINITIONS

**Sanitation** is the collection, transport, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste, and associated hygiene promotion (UN, 2008). National Sanitation Foundation of USA defines sanitation as a way of life. It is the quality of living that is expressed in the clean home, the clean business, the clean neighborhood and the clean community.

**Child’s health** includes the study of possible environmental causes of children’s illnesses and disorders, as well as the prevention and treatment of environmentally mediated diseases in children and infants.

**ABSTRACT**

The study was conducted in Yei River State, South Sudan with the aim of investigating the effect of sanitation on child health. The specific objectives were to; determine the factors contributing to poor sanitation practices, investigate how sanitation practices affect children’s health and find out the strategies that could be employed to enhance sanitation practices among children. The study employed a descriptive research design where both quantitative and qualitative approaches of data collection were employed to collect data from 80 respondents. The participants were selected using two sampling techniques; purposive and simple random sampling. The data was collected using questionnaire and interview guide which was then analyzed descriptively. The study found a number of factors contributing to poor sanitation such as inadequate hygiene education, neglect of health facilities, insufficient water supply, inadequate toilet/latrine facilities, lack of dustbins for disposing wastes, throwing rubbish anywhere in the compound, inadequate funds to provide sanitation equipment and poor waste storage methods adopted. Poor sanitation has led to negative effects on children’s health and its manifested in children being sick due to diseases like malaria, cholera, diarrhoea, and even death in extreme cases. Due to these negative effects, communities have devised means of ensuring proper sanitation. These ways include employing cleaners to keep the environment clean and encouraging people to undertake research in environmental sanitation. However, these aren’t enough to ensure proper sanitation. The researcher recommended that household members should mainly be sensitised by word of mouth (face to face) and direct participatory interaction and sensitise and train local leaders about sanitation and hygiene since people believe and trust local leaders in the community. Also, NGOs and CBOs working in the region should consider undertaking sanitation and hygiene promotion activities as part of their development strategies and integrating them in their plans.

# CHAPTER ONE

# INTRODUCTION OF THE STUDY

# 1.1. Introduction

The chapter presents the background of the study, statement of the problem, objectives of the study, significance, limitations and the scope of the study. This brings about good understanding of what the study was expected to attain in the long run.

# 1.2 Background of the study

Sanitation is the collection, transport, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste, and associated hygiene promotion (UN, 2008). National Sanitation Foundation of USA defines sanitation as a way of life. It is the quality of living that is expressed in the clean home, the clean business, the clean neighborhood and the clean community. Being the way of life, it must come from within the people, it is nourished by knowledge and grows as an obligation and an ideal in human relations". While the Indian Rural Council, defines sanitation as the management of disposal, treatment and reuse of human excreta, solid wastes and waste water; supported by good hygiene behavior, in order to ensure environmental conditions in human settlements which promote the well-being and health of the population.

Child health includes the study of possible environmental causes of children’s illnesses and disorders, as well as the prevention and treatment of environmentally mediated diseases in children and infants. Children are highly vulnerable to the negative health consequences associated with many environmental exposures. Children receive proportionately larger doses of environmental toxicants than adults, and the fact that their organs and tissues are rapidly developing makes them particularly susceptible to chemical insults.

Globally, about 2.5 billion lack improved sanitation - pit latrines with slabs or other facilities intended to sequester human feces from the environment (UNICEF/WHO, 2015). Almost one billion of these people have no sanitation facility whatsoever and practice open defecation. Nearly all these sanitation deficiencies are among vulnerable populations in low-income countries, and are primarily in rural settings and urban slums in South and Southeast Asia and Sub-Saharan Africa (WHO/UNICEF, 2015). Unimproved sanitation is a major cause of diarrhoea, which globally accounts for approximately 1.4 million child deaths each year. The majority of these deaths occur in sub-Saharan Africa where nearly half the population lacks access to improved sanitation (WHO, 2012). Children are more vulnerable to the health hazards associated with unimproved sanitation; their immune, respiratory, and digestive systems are still developing (Fayehun, 2010), and children play in areas where contaminants may accumulate (WHO, 2003).

The impact of inadequate global sanitation coverage on health is particularly significant: the World Health Organization (WHO) estimates that 7% of the world’s deaths and 8% of the global disease burden are caused by diseases related to unsafe sanitation (WHO, 2008). Unsafe sanitation is a major risk factor for diarrhoea disease, the biggest cause of death in children under the age of five in Sub-Saharan Africa (Black *et al.*, 2010) and the second leading contributor to the global disease burden. Poor hygiene practices is a major risk factor for respiratory infections, the leading contributor to the global burden of disease and is strongly associated with further diseases and infections, including intestinal nematode infections, lymphatic filariasis, trachoma and schistosomiasis, among others (WHO, 2008c).

WHO estimates that exposure to inadequate drinking water, sanitation and hand hygiene was responsible for 58% of deaths from diarrhea, adding up to 840,000 deaths in low and middle-income countries, in 2012. This translates into 1.5% of the global disease burden, even 5.5% for children under five. There is growing evidence that repeated exposure to unsafe drinking water; poor sanitation and inadequate hygiene have a significant impact on stunting. This comes about as a result of intestinal worm infections, diarrheal diseases and environmental enteropathy which lead to a poor nutritional status. Cholera is also transmitted via contaminated water. The cholera epidemic in Haiti has killed more than 8,500 people since 2010 (WHO, 2012).

In most developing countries, three most important environmental health problems that affect a large majority of population are inadequate sanitation, contaminated water supply, and untreated solid wastes. The Global Water Supply and Sanitation Assessment Report states that at the beginning of 2000, two-fifth lacked access to improved sanitation (WHO/UNICEF, 2000). In the absence of proper sanitation, people suffered from high levels of infectious diseases leading to high incidences of morbidity and mortality. This directly affected the ability of a country to maintain an efficient economy and implied great personal suffering among infected individuals and their families (Richards, 2012). More than a third of world population (about 2.4 billion people) lacked access to adequate sanitation facilities and four out of five of these unserved people lived in Asia (Cairncross, 2013). Inadequate sanitation like unsafe disposal of human excreta, open defecation, lack of infrastructure (sewerage, drainage/sullage), and absence of hygiene management constitute a major threat to the health of the people. Thus, improving environmental health is the most cost effective means of enhancing people’s health and welfare. Nearly 1.7 million deaths each year is attributable to inadequate access to water, sanitation and hygiene (WHO, 2012).

Basic sanitation is a vital human need for health and efficiency. All the ill health, diseases and death in developing nations including South Sudan are attributed to the lack of these essentials. According to WHO (2008), about 30,000 people die every day in the world due to unsafe water consumption and insufficient sanitation, tens of millions of people spend half their day walking in hot sun, to carry home polluted water, which poisons them and their families including children.

**Yei River State, South Sudan**

Yei River State is one of the 28 states of South Sudan. It was formed following the split up of Sudan and it is located in the Equatoria region and it borders Maridi and Amadi to the north, Jubek to the northeast, and Imatong to the east. Yei River State, along with Jubek State and Terekeka State was part of the former state of Central Equatoria. The capital and largest city of Yei River State is Yei, South Sudan, with the city having an estimated population of 260,720 in 2014.

The state consists of 10 counties. The counties are ŋepo County (note the velar nasal at the front), Kindi County, Otogo County, Tore County, Wuji County, Yei River County, Morobo County, Kajo-Keji County, Kupera County, and Lainya County. The area around Yei receives adequate rainfall year-round, which allows for the cultivation of food and cash crops as well as the raising of domestic livestock. Coffee and cassava are some of the crops grown locally. Lush farmlands cover the landscape on the city outskirts. Three commercial banks maintain branches in the city: Equity Bank (South Sudan), Ivory Bank, and Kenya Commercial Bank (South Sudan).

The road network to neighboring cities and towns is actively undergoing repairs. For example, the road between Yei and Kaya, on the Ugandan border, has been repaired. It was financed by HABITAT and WFP. With the improvements the travel time to Kaya was reduced from five hours to one. Yei is also served by Yei Airport. The civil war decimated the city's infrastructure. However, with the cessation of hostilities in 2005 and the attainment of independence by South Sudan in July 2011, the prospects of Yei recapturing its former days of Small London look good indeed.

# 1.3 Statement of the Problem

Access to improved sanitation facilities does not, on its own, necessarily lead to improved child health. There is now very clear evidence showing the effect of hygienic behavior, in particular hand-washing with soap at critical times: after defecating and before eating or preparing food. Hand-washing with soap can significantly reduce the incidence of diarrhea, which is the second leading cause of death amongst children under five years old (Black *et al.,* 2010). In fact, recent studies suggest that regular hand-washing with soap at critical times can reduce the number of diarrhea bouts by almost 50 per cent. Good hand-washing practices have also been shown to reduce the incidence of other diseases, notably pneumonia, trachoma, scabies, skin and eye infections and diarrhea-related diseases like cholera and dysentery. The promotion of hand-washing with soap is also a key strategy for controlling the spread of Avian Influenza (bird flu).

However, More than 80 per cent people in rural Yei River State do not have access to toilets. Poor sanitation is also a serious threat to the cleanliness of the environment and the water resources used for the supply of drinking water. Poor sanitation can adversely impact nutritional status in young children not only through the impaired absorption of nutrients associated but through sub-clinical infections with fecal pathogens (Guerrant et al., 2012, Humphrey, 2009). Repeated and persistent infection may lead to environmental enteric dysfunction, a subclinical condition that can lead to growth faltering (Ngure et al., 2014). Despite the Government of South Sudan investing large amounts of money in sanitation, the results and achievements are not very encouraging. It was on this basis that the researcher investigated the effect of sanitation on child health.

# 1.4 Objectives of the Study

**1.4.1 General Objective**

The main objective of the study was to investigate the effect of sanitation on child health. A case study of Yei River State, South Sudan.

**1.4.2 Specific Objectives**

1. To determine the factors contributing to poor sanitation practices in Yei River State.
2. To investigate how sanitation practices affect children’s health in Yei River State.
3. To find out the strategies that could be employed to enhance sanitation practices among children in Yei River State.

# 1.5 Research Questions

1. What factors contribute to poor sanitation practices in Yei River State?
2. How do sanitation practices affect children’s health in Yei River State?
3. What strategies can be employed to enhance sanitation practices among children in Yei River State?

# 1.6 Significance of the Study

***1.6.1. Policy makers***

The study may help policy makers to design relevant policies aimed at promoting access to proper sanitation in order to improve child health in Yei River state.

***1.6.2. Yei River State***

Yei River State is likely to benefit from this study by gaining insights concerning the relationship between Sanitation and child health and the factors influencing it.

***1.6.3. Researchers***

Researchers who are doing related study may use this research as their secondary data. The research will also propose other areas which the researcher can explore further. They can also do another research in the same way to weight the trend.

# 1.7 Limitation of the Study

The researcher anticipates encountering the following during the course of the study:

1. Some respondents were reluctant to give relevant information during the course of the study. This was overcome by thoroughly explaining to the respondents the purpose of the study was purely academic and assuring them that whatever information they shared would be kept confident.
2. The research incurred expenses in terms of typing the researcher report, travel costs and stationery. This was overcome by getting financial assistance from relatives, family and friends and budgeting properly

# 1.8 Scope of the study

The study was carried out in Yei River State which is one of the 28 states of South Sudan. It aimed at investigating the effect of sanitation on child health. The study was undertaken within a period of two months of March – April 2019.

# CHAPTER TWO

# LITERATURE REVIEW

# 2.1 Introduction

The review was an important part of the objective approach to research in all fields of enquiry. This is aimed at identifying the research gaps to the existing literature and emphasizing on the need to carry out this study which is concerned with investigating the effect of sanitation on child health. The purpose of this literature review was to provide the researcher with means of getting to the frontiers of knowledge of the issue under investigation. To this end, the present chapter covers a review of theoretical literature review of analytical literature of analysis and gaps to be filled, a summary of the chapter and the conceptual framework.

# 2.2 Review of Theoretical Literature

**2.2.1. Factors Contributing to Poor Sanitation Practices**

Sanitation as a concept refers mainly to the facilities and hygiene principles and practices related to the safe collection, reuse and/or disposal of human excreta and domestic wastewater (Elledge & Sanni, 2015). Good sanitation and hygiene standards are basic requirements for improved health, although the exact role of sanitation in improving public health still remains in dispute. Good environmental sanitation practices ideally include – solid waste disposal, wastewater drainage, and personal or community hygiene. Deficiencies in these inputs contribute significantly to the continuing high rate of infant and child mortality from diarrhoea diseases. Many studies have indicated that lack of sanitation puts people at higher risk for diarrhoea disease than lack of water. Yet, governments and development partners have reportedly on the whole neglected sanitation practices and this has increased poor sanitation practices in many areas.

Many countries, including South Sudan have given increasing attention to building up sanitation infrastructures, including use of latrines for excreta disposal. This process was reinforced by the Proclamation of the “International Drinking Water Supply and Sanitation Decade” by The General Assembly of the United Nations in November 1980. The assembly was deeply concerned that a large part of the world’s population did not have reasonable access to safe and ample water supplies and that even a larger part was without adequate sanitation facilities. The period 1981-1990 was thus proclaimed to commit member states to assume a commitment to bring about a substantial improvement in the standards and levels of services in drinking water supply and sanitation by the year 1990.

Adequate sanitation is the foundation of development, and yet a decent toilet or latrine is reportedly an unknown luxury to half the people on earth. Globally, the percentage of those with access to hygienic sanitation facilities has declined slightly over the 1990s, as construction of latrines has fallen behind population growth. The main result is increased diarrhoea disease, which kills 2.2 million children a year and consumes precious funds in health care costs, and prevents families and nations from developing Akhtar Hameed Khan, The Progress of Nations 1997, UNICEF, in Perez 1999. Thus good sanitation and hygiene practices are prerequisites to good health and freedom from disease.

Despite the progress made worldwide in recent decades in the area of water and sanitation, more than 2.3 billion people still live without access to sanitation facilities and some are unable to practice basic hygiene.Access to water and basic sanitation has deteriorated in Chitungwiza due to water rationing, burst water and sewer pipes, poor disposal of rubbish and overpopulation. Improvements in health associated with better water quality are smaller than those obtained through increases in quantity of water, which allow for better personal and domestic hygiene practices. Population groups that consistently use more water have better health than groups that use less water. This has been shown repeatedly for several health outcomes such as specific diarrhea pathogens, diarrhea morbidity and child growth (Gasana, 2012).

Enhancements in water and sanitation do not automatically result in improvements in health. The addition of hygiene education is required to impart concern on the basic issues of hand washing, proper disposal of faecal matter and protection of drinking water.Millions of school-going children miss or have ineffective schooling as a result of disease linked to unsafe drinking water and inadequate sanitation. In 2002 more than 500 million school aged children lived in families which did not have access to improved water supply. Sadly most schools may not have adequate sanitation facilities. Numerous studies have shown that children infected with intestinal worms perform poorly academically. A child severely deprived of shelter, living in an overcrowded home and an impoverished neighbourhood may not be able to absorb an education even if there is a school nearby (WHO/UNICEF, 2004)

In the developing world girls mostly bear the burden of water collection, which may take them many hours a day, leaving them with less or no time nor energy for school. Secondly, girls, particularly those old enough to menstruate, may be reluctant to attend school.Children’s knowledge, attitudes and beliefs largely depend on what they are taught be it at home or school. In Leeds, UK, many outbreaks of gastrointestinal infections have been associated with primary schools. In terms of water deprivation, approximately 400 million children, on average one in every 5 children in developing countries; have no access to safe water. The situation is particularly severe in the sub-Saharan Africa. Four out of five children either use surface water or have to walk more than 15 min to find a protected water source. Rates of severe deprivation are considerably higher in rural areas (27%) than to urban areas (70%) (WHO/UNICEF, 2012).

In terms of sanitation deprivation, one in every three children has no access to safe sanitation; again the problem is particularly pronounced in rural areas. Without access to sanitation, children’s risk of disease rises dramatically further jeopardizing their chance of survival and often reducing the likelihood that they will be able to take full advantage of schooling. School health services have not yet developed in many developing countries. In Zimbabwe, the Ministry of Health and Child Welfare, together with the Ministry of Education, Sports and Culture, have drafted a policy on school health known as The Zimbabwe Comprehensive School Health Policy, with the main objectives being to promote, protect and support delivery of health instruction, health services and a healthy environment in the school setting (Moyo, 2009).

Inadequate collection and improper disposal of environmental wastes facilitates multiplication of pathogens causing diseases like cholera and diarrhea and provides good breeding site for disease vectors like mosquitoes (malaria), flies (diarrhea) and rodents (Abul 2010). Dumpsites are good sources of environmental sanitation (polluting soil, ground and surface water) due to the fact that they usually contain almost all types of pollutants from the initial collection sources (Kassenga & Mbuligwe 2009).

Proper environmental waste disposal is a big problem in urban cities and more so in developing countries. The intensity of the waste management problem increases with increased population due to the increased human activities and the solid wastes to be removed for disposal. Industries and urban management systems generate massive amount of wastes and most often dumping them in open fields posing a serious detrimental effects on the environment (Safiuddin et al 2010).

Waste disposal and Collection In ideal situation, waste are collected from the source of generation and taken to disposal sites but in Nigeria, waste are dumped off by horst generators before they are collected and disposed off by sanitation agencies. The waste storage and collection receptacles used at generation site are old bucket, basket, cartons, plastic bag/containers tin/can in most cases. Waste are collected and disposed off in open dumps, drainage channels and few designated collection centers, from these orthodox and unorthodox collection centers, waste are packed and transported using tippers vehicles, wheel barrows and few specialized cover topped environmental sanitation vehicles, to crude form of sanitary landfills usually large open pit (mine ponds in some cases) and set ablaze (Mshelia, 2015).

**2.2.2. How Sanitation Practices affect Children’s Health**

The World Health Organization (WHO) reports that over the last decade, while access to water supply has risen from 61% to 75% in developing countries, during the same period, the proportion of people with access to sanitary means of excreta disposal actually declined from 36% to 34%, as funding for sanitation decreased and yet the population continues to increase. It is further reported that the relatively few existing sanitation programmes have rarely achieved the desired impact, since most of the activities to achieve target sanitation levels involve the installation of “hardware” and success is measured by numbers of sanitary units built (WHO, 2012). However, “hardware” technology seems inevitable, especially in areas that have serious shortage of water sources such as Yei River State.

Lack of sanitation leads to disease, as was first noted scientifically in 1842 in Chadwick’s seminal ‘‘Report on an inquiry into the sanitary condition of the labouring population of Great Britain’’. A less scientifically rigorous but nonetheless professionally significant indicator of the impact on health of poor sanitation was provided in 2007, when readers of the BMJ (British Medical Journal) voted sanitation the most important medical milestone since 1840. The diseases associated with poor sanitation are particularly correlated with poverty and infancy and alone account for about 10% of the global burden of disease. At any given time close to half of the urban populations of Africa, Asia, and Latin America have a disease associated with poor sanitation, hygiene, and water (WHO/UNICEF, 2010). Of human excreta, faeces are the most dangerous to health. One gram of fresh faeces from an infected person can contain around 106 viral pathogens, 106–108 bacterial pathogens, 104 protozoan cysts or oocysts, and 10–104 helminth eggs.

Diseases related to poor sanitation and water availability causes many sicknesses like cholera, diarrhoea, malaria and typhoid. All these diseases greatly affect the health of students. Students cannot even learn properly because they are sick. Even learning in unhealthy environments leads to student not even understanding what they are being taught and in extreme cases it could lead to students’ mortality. Snel (2004) and Water Aid Uganda (2013) noted that diarrhoea which is caused by poor sanitation kills 1.5 million children each year. Based on the negative effects of poor sanitation on the health of students, something has to be done.

Diarrhoea diseases are the most important of the faeco-oral diseases globally, causing around 1.6–2.5 million deaths annually, many of them among children under 5 years old living in developing countries. In 2008, for example, diarrhoea was the leading cause of death among children under 5 years in sub- Saharan Africa, resulting in 19% of all deaths in this age group. Systematic reviews suggest that improved sanitation can reduce rates of diarrhoea diseases by 32%–37% (Barreto, 2007).

Further, it is not just the provision and adult use of sanitation that is important. A meta-analysis of observational studies of infants’ faeces disposal practices found that unsafe disposal increased the risk of diarrhoea by 23%, highlighting the importance of the safe management of both adults’ and infants’ faeces (Lanata, 2008).

Neglected tropical diseases, while resulting in little mortality, cause substantial disability-adjusted life year (DALY) losses in developing countries. Many of these diseases have a faeco-oral transmission pathway. Thus, improved sanitation could contribute significantly to a sustained reduction in the prevalence of many of them, including trachoma, soiltransmitted helminthiases, and schistosomiasis. Unfortunately, the current policy focus in most parts of the world is on treatment by medication, which, unlike good sanitation, is not a preferred solution because, in part, it is much more expensive (Hotez, 2007).

**2.2.3. Strategies that can be employed to enhance Sanitation Practices among Children**

According to Adelakun (2003), promotion of environmental sanitation quality depends on how households and community see themselves in relation to their environment. It is the ways people perceive the environment that they will treat it. And it is the way the environment is treated that it will in turn support life. He believes that illiteracy, ignorance, poverty and greediness are some of the major contribution of environmental degradation because each influence people’s behavior and attitudes towards the environment.

A community that is ignorant of their action on the environment will likely have wrong perception about the effect of that on their health. A community that understands the link between a healthy environment and good health can save money and avoidable agonies. Noibi (1992) states that environmental deterioration had arisen to a large extent because peoples are not aware of the implications of their actions, He further asserts that a person’s level of ignorance of the environment can be said to be positively related to the degree of (his/her) damage to the environment. The way a person perceives the environment reflects his or her previous experience, education, lifestyle and interest.

Despite the law level of formal education most especially in the villages, various communities managed the waste generated properly. In the past, people lived in harmony with their environment and they enjoyed good health. There were few medical experts, if any, in many towns and villages. They had dumping sites for refuse far away from the hearts of the village where people live, and they occasionally burnt these sites. Human fasces at the center of the city were regarded as sacrilege. People immediately removed carcasses of animal from the village any time there was one. Trees were planted to provide fresh air and shades for relaxation. Community’s sources of water guarded against pollution (Purdom and Anderson, 1983).

In Uganda, a Sanitation Task Force was formed in 1997, which developed a draft sanitation policy, as well as guidelines on technical options and promotional material. Subsequently, activities of the Task Force culminated in the National Sanitation Forum that was attended by political leaders throughout the country, as well as representatives of various ministries, NGOs and donor agencies. The aim was to build commitment and consensus on sanitation at all levels. The outcome was the Kampala Declaration on Sanitation 1997 (KDS), which endorsed the guiding principles and provided a ten-point strategy for action at district level.

The current health policy focuses on health systems that are demonstrably cost-effective and have the largest impact on reducing morbidity and mortality. The major contributors to the burden of disease are given the highest priority, and they constitute the Uganda National Minimum Health Care Package. These are interventions that address the major causes of burden of disease and collectively constitute the cardinal reference in determining the allocation of public funds and other essential inputs.

Components of the minimum health care package include a number of diseases such as malaria, HIV/AIDS, and tuberculosis as well as approaches and services like essential antenatal and obstetric care, the Integrated Management of childhood Illnesses (IMCI), family planning, and adolescent sexual and reproductive health. Others include other public health interventions such as immunization, environmental health, health education, and school health activities, amongst others.

Environmental health addresses the burden of disease resulting from poor environmental health, particularly by placing greater emphasis on rural areas where the population has low access to safe water and poor latrine coverage. This will be achieved through the promotion of personal, household, institutional, community and food hygiene. In addition, government pledges to manage health issues that relate to environmental and occupational hazards through enforcing appropriate legislation (MoH, 2009).

In Uganda, environmental sanitation is interpreted as “management of environmental factors and human behavior that are injurious or likely to be injurious to health”. Activities include: implementation of minimum environmental health packages with emphasis on safe water chain and sanitation; promoting proper food hygiene; management of water; gender positive responsive sanitation; clean and hygienic living at household level; and school health and sanitation.

# 2.3 Review of Critical Literature

In Zimbabwe, Moyo, Makoni and Ndambafound that there was a similarity in practices of handling of menstruation in both rural and urban schools in that menstruation was not considered an issue that deserved special attention. There was a lack of adequate ablution facilities and sick bays, and toilets ratios did not meet the government specifications of one squat hole per 15 girls and one per 20 boys. In urban schools there were no incinerators or other suitable disposal facilities and as a result the girls flushed their sanitary pads down the toilet leading to blockages of sewer lines. In most cases, school toilets are not adapted to the special needs of boys and girls (Moyo, 2009).

While many of the studies included in those reviews could not rigorously disaggregate the specific effects of sanitation from the overall effects of wider water, sanitation, and hygiene interventions, a longitudinal cohort study in Salvador, Brazil, found that an increase in sewerage coverage from 26% to 80% of the target population resulted in a 22% reduction of diarrhea prevalence in children under 3 years of age; in those areas where the baseline diarrhea prevalence had been highest and safe sanitation coverage lowest, the prevalence rate fell by 43% (Barreto, 2007).

Similarly, a recent meta-analysis that explored the impact of the provision of sewerage on diarrhea prevalence reported a pooled estimate of a 30% reduction in diarrhea prevalence and up to 60% reduction in areas with especially poor baseline sanitation conditions. Another longitudinal study in urban Brazil found that the major risk factors for diarrhea in the first three years of life were low socioeconomic status, poor sanitation conditions, presence of intestinal parasites, and absence of prenatal examination. The study concluded that diarrhea disease rates could be substantially decreased by interventions designed to improve the sanitary and general living conditions of households (Norman, 2010).

# 2.4 Summary of Gaps to be filled

The study therefore is aimed at filling the gaps identified in previous study by investigating very concept through to be creating problems, while explaining the effect of sanitation on child health. Most these studies have been carried out in other areas outside South Sudan. This study was carried out in Yei River State therefore, current information was obtained.

# 2.5 Conceptual Framework

This section prospects a schematic interpretation of the conceptual framework as shown in the figure below.

**Figure 2.1 Conceptual Framework**

**Independent variable Dependent variable**

**Intervening variables**

* Condition of the environment
* Government policy
* Knowledge, attitudes, values

**SANITATION**

* Inadequate Hygiene education
* Neglect of Health facilities
* Inadequate toilet/latrine facilities
* Insufficient water supply
* Poor waste storage methods

**CHILD HEALTH**

Source: Author (2019)

# CHAPTER THREE

# METHODOLOGY

# 3.0 Introduction

This chapter presents methods that were used in the study on the effect of sanitation on child health. This chapter discussed the research design, study area, study population, sample size, sampling methods, and sources of data, data collection instruments, quality control of instrument and data analysis.

# 3.1 Research Design

Research design embraced the methodology and procedures employed to conduct scientific research. The design defined the study type; data collection methods and statistical analysis plan. The research strategy used for the research was a survey approach in order to collect quantitative data which was analyzed using descriptive statistical tools. The use of a survey enabled generalization to be conducted using findings generated from a sample size which was representative of the whole population. Descriptive studies are not only restricted to fact finding but may often result in the formation of important principles of knowledge and solution to significant problems. They are more than just a collection of data since they involve measurement, classification, analysis and interpretation.

# 3.2. Study Area

The study was carried out in Yei River State which is one of the 28 states of South Sudan. It is located in the Equatoria region and it borders Maridi and Amadi to the north, Jubek to the northeast, and Imatong to the east. Yei River State, along with Jubek State and Terekeka State was part of the former state of Central Equatoria. The capital and largest city of Yei River State is Yei, South Sudan, with the city having an estimated population of 260,720 in 2014. The state consists of 10 counties. The counties are ŋepo County (note the velar nasal at the front), Kindi County, Otogo County, Tore County, Wuji County, Yei River County, Morobo County, Kajo-Keji County, Kupera County, and Lainya County. The area around Yei receives adequate rainfall year-round, which allows for the cultivation of food and cash crops as well as the raising of domestic livestock. Coffee and cassava are some of the crops grown locally. Lush farmlands cover the landscape on the city outskirts. Three commercial banks maintain branches in the city: Equity Bank (South Sudan), Ivory Bank, and Kenya Commercial Bank (South Sudan). Furthermore, the study area is accessible to the researcher.

# 3.3 Study Population

Schindlers (2003), described the target population as the complete set of individual’s area of objects with some common characteristics to which the researcher wants to generalize the result of the study. According to Kothari (2004), target population is a universal set of the study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result. The population for the current study consisted of community members, community health workers, village health teams and local leaders.

# Table 3.1 Target Population

|  |  |  |
| --- | --- | --- |
| **Category** | **Frequency** | **Percentage** |
| Community members | 55 | 52.9 |
| Health workers | 10 | 9.6 |
| Village health teams (VHTs) | 34 | 32.7 |
| Local leaders | 5 | 4.8 |
| **Total** | **104** | **100** |

**Source: Primary Data (2019)**

# 3.4 Sample size

A sample is a selection of a group of people or events from a population to be able to find out true facts about the sample that was true of the population. The sample size consisted of 94 respondents from the study area. It was determined based on the Krejcie and Morgan's sample size calculation. The sample size determination Table 3.2 was derivative from the sample size calculation which was expressed as below equation (Krejcie and Morgan, 1970). The Krejcie and Morgan's sample size calculation is based on p = 0.05 where the probability of committing type I error is less than 5 % orp*<0.05.*

*S=*

*Where,*

s = required sample size.

*X2*=the table value of chi-square for 1 degree of freedom at the desired confidence level *(0.05* = 3.841).

*N =* the population size.

*P* = the population proportion (assumed to be 0.50 since this would provide the maximum sample size.

*d* = the degree of accuracy expressed as proportion (0.05).

# Table 3.2: Sample Size

|  |  |  |
| --- | --- | --- |
| **Category** | **Target population** | **Sample size** |
| Community members | 55 | 48 |
| Health workers | 10 | 10 |
| Village health teams (VHTs) | 34 | 31 |
| Local leaders | 5 | 5 |
| **Total** | **104** | **94** |

**Source: Primary Data (2019)**

# 3.5 Sampling methods

Sampling is that part of statistical practice concerned with the selection of an unbiased or random subset of individual observations within a population of individuals intended to yield some knowledge about the population of concern, especially for the purposes of making predictions based on the sample frame.

***3.5.1. Purposive sampling technique***

Saunders et al, (2012) purposive sampling (also known as judgmental, selective or subjective) is a sampling technique in which a researcher relies on his or her own judgment when choosing members of population to participate in the study. It was convenient enough because of cost and time effectiveness. Purposive sampling was used in selecting knowledgeable participants (information rich participants). Participants were usually selected based on pre-determined criteria (inclusion criteria). This technique was used to select local leaders, VHTs and health workers because they are key implementers of good sanitation practices in the area.

***3.5.2. Simple random sampling***

The study also used simple random method to reduce on the biasness of the purposive data and was mainly used on community members because it was free of classification error, and it required minimum advance knowledge of the population other than the frame. Its simplicity also made it relatively easy to interpret data collected in this manner. For these reasons, simple random sampling best suits situations where not much information is available about the population and data collection can be efficiently conducted on randomly distributed items, or where the cost of sampling is small enough to make efficiency less important than simplicity. This was only used in selecting community members both women and men because they are always with children thus, they are aware of the welfare and health of these children.

# 3.6 Sources of Data

The data for this study was drawn from two main sources; primary and secondary data sources.

**3.6.1 Primary Data**

The primary data sources were original data collected and analyzed by the researcher from the field. These were mainly obtained from the responses of respondents to self-completion questionnaires and interviews guides.

**3.6.2 Secondary Data**

This data was collected from various relevant sources such as available handbooks, annual reports, performance reports, employment policies, and relevant information from the organization’s website, blogs, journals, newsletters and other documented materials by the researcher. The use of multiple independent sources of data was to establish the truth and accuracy of any claim; thus it was expected to enhance the reliability and validity of the study.

# 3.7 Data Collection Instruments

Data collection instruments are the tools used to collect information as part of a research. The validity and reliability of data collection and instruments was of extreme importance to any sample survey. It was therefore essential to properly design data collection instruments so as to reach reliable and valid conclusions.

**3.7.1 Questionnaire**

The researcher used the questioning method whereby he drafted to respondents structured questions. This method was used because some respondents have no time to sit down and answer during interviews. A questionnaire was used and this was in form of close ended in nature and this allowed the study respondents to fill the questionnaire in the study field. The questionnaire method of data collection was used because of being cheap and that the method collects responses with minimum errors and high level of confidentiality. This method was used to obtain data from community members.

**3.7.2 Interview guide**

Interview guide was used by the study since the method helped in the collection of more data as it allowed the interaction of both the researcher and the respondents. The interview method was used because any misunderstanding and mistakes were rectified easily in an interview. Also the relationship between the interviewer and the interviewee was developed through an interview. It increased mutual understanding and co-operation between the parties and suitable candidates were selected through interview because the interviewer got to know a lot about the candidate by this process. Interview helped to collect the fresh, new and primary information as needed. The method was used to collect data from local leaders, VHTs and health workers because they may have no time to answer the questionnaires.

# 3.8 Quality control of instrument

**3.8.1. Validity**

For content validity, 12 individual experts were used and only the items ranked as relevant and very relevant were retained with the outcome so as to obtain resources above 0.7. Here, content validity index was used to measure the validity of research instruments.

**3.8.2. Reliability**

Reliability of research was conducted to weed out bias and vagueness in the instrument. The retest reliability was done by subjecting the instruments to 12 individual experts which test was repeated after one week. The Cronbach Alpha value of not less than 0.7 was obtained. The scales was examined using Cronbach’s coefficient and the composite reliabilities for the scales meet the minimum recommended cut off of 0.7 (Nunnally, 1998). Therefore the scales had adequate internal consistency yielding the same meaning of the measurement items to the respondents.

# 3.9. Data analysis

The study being both qualitative and quantitative, the researcher used two methods of data analysis namely; qualitative and quantitative data analysis methods.

***Quantitative data***

For purpose of processing data, the questionnaires was sorted, arranged, coded, edited and data entered in MS Excel which was then analyzed using statistical tables showing frequencies and percentages accordingly. The researcher engaged *‘during and after collection analysis’* and relied on the quantitative method of data analysis where statistical figures were expressed in clear percentage findings and presented in tables or graphs in accordance to the stated objectives. These were used to interpret the data into meaningful information.

***Qualitative data***

The data of this study was presented thematically with the themes developed from the research questions. Qualitative method in data presentation is a method of presenting data with analytical and interpretive perspectives for easy understanding. It facilitates a comprehensive approach to research questions (Powell & Renner, 2003). Patterns and connections within and between categories of data collected were identified. Data was analyzed thematically to facilitate the development of themes organized around the key study objectives.

# CHAPTER FOUR

# DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

# 4.1 Introduction

The study looked at the effect of sanitation on child health in Yei River State, South Sudan. The findings from the study were presented and analyzed orderly based on the formulated study objectives. This was made possible with help of computer packages MS word and Excel where by tables, graphs and pie-charts were generated.

The chapter begins by presenting the response rate, biographic characteristics of respondents in terms of gender; age and education levels. The study there after discusses findings as per the formulated objectives of the study.

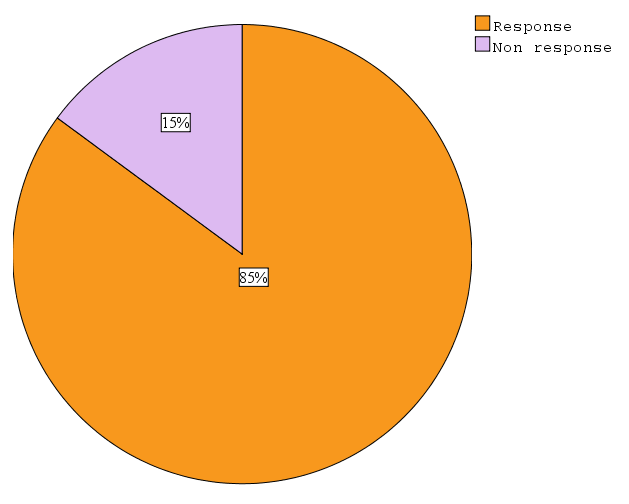
# 4.2 Presentation of Findings

**4.2.1 Response Rate**

# Table 4.1 Response Rate

|  |  |  |
| --- | --- | --- |
| **Category** | **Frequency** | **Percentage** |
| Response | 80 | 85 |
| Non-response | 14 | 15 |
| **Total** | **94** | **100** |

# Figure 4.1: Response Rate



***Source: Primary Data (2019)***

Table 4.1 and Figure 4.1 above indicated that a sample of 94 respondents was selected using purposive and simple random sampling methods. Questionnaires, and interview guides were administered to them for data collection. Among the 94 respondents, 80 questionnaires were returned, giving a response rate of 85% while the 14 questionnaires were not returned.

**4.2.2. Background information of the respondents**

This section presents the information about the people who participated in the study who comprised of Community members, Health workers, Village Health Teams (VHTs) and Local leaders.

**Gender of the respondents**

Under the gender distribution of respondents, the study was delighted with both male and female respondents but male respondents were more than female ones:

# Table 4.2: Showing Gender of Respondents

|  |  |  |
| --- | --- | --- |
| **Gender** | **Frequency** | **Percentage (%)** |
| Male | 46 | 57 |
| Female | 34 | 43 |
| **Total** | **80** | **100** |

# Figure 4.2: Showing Gender of Respondents

***Source: Primary Data (2019)***

According to Table 4.2 and figure 4.2, the study had female and male respondents. More so it is indicated that men were more than women. Findings revealed that 56.7% of respondents were men while 43.3% were women. The gender distribution was so due to the fact that men were much more willing to provide information for the study compared to women. Despite the gender differences, this had no effect on the study results as all people were in position to provide valid information. This gives an implication that there was balance in selection of respondents as the difference between the two sexes was small. Therefore, a dependable result as gender bias is minimized.

**Age of respondents**

The age of respondents was taken note of by the study. Accordingly the age was classified into age groups for easy estimation of the age brackets where an individual belongs given that females hardly disclose their age.

# Table 4.3: Showing Age range of Respondents

|  |  |  |
| --- | --- | --- |
| **Age group** | **Frequency** | **Percentage (%)** |
| Below 20years | 8 | 10 |
| 20 -30 years | 28 | 35 |
| 30 - 40 years | 40 | 50 |
| 40 and above | 12 | 15 |
| **Total** | **80** | **100** |

# 

# Figure 4.3: ShowingAge range of Respondents

***Source: Primary Data (2019)***

Results in table 4.3 & Figure 4.3 indicates that majority of respondents 50% were in the 30-40 age group, 35% of them were between 20-30years while 15% of the respondents were 40years and above and only 10% of the study respondents were in the age bracket of below 20years. This implies that majority had a better experience in regard to sanitation and child health.

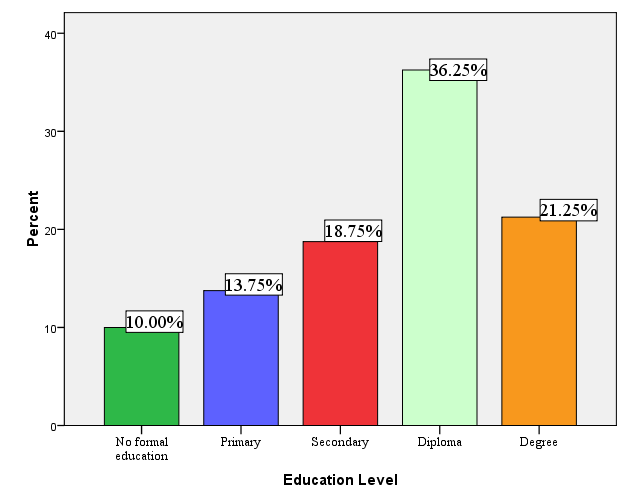
**Education level of respondents**

The study considered several categories of education levels namely; primary, secondary, tertiary, university and others. Accordingly all the established categories of education levels had representatives like showed below:

# Table 4.4: Showing Education of Respondents

|  |  |  |
| --- | --- | --- |
| **Category** | **Frequency** | **Percentage (%)** |
| No formal education | 8 | 10.0 |
| Primary | 11 | 13.8 |
| Secondary | 15 | 18.8 |
| Diploma | 29 | 36.2 |
| Degree | 17 | 21.2 |
| Masters | 0 | 0 |
| PHD | 0 | 0 |
| **Total** | **80** | **100** |

# Figure 4.4: Showing Level of educationof Respondents



***Source: Primary Data (2019)***

From table 4.4 & figure 4.4 above, majority of respondents constituting 36.25% were diploma holders, 21.25% of them acquired degree and 18.75% of the respondents had acquired secondary level, 13.75% had completed primary level of education and only 10% of the respondents had not acquired any formal education. This means that the majority of the respondents had attended some formal education meaning they provide valid information since they were aware of the sanitation issues that affect child health in Yei River State.

**4.2.3. Factors Contributing to Poor Sanitation Practices in Yei River State.**

Objective one was meant to determine the factors contributing to poor sanitation practices in Yei River State. The findings are shown in Table: 4.5:

# Table 4.5: Factors Contributing to Poor Sanitation Practices in Yei River State.

|  |  |  |  |
| --- | --- | --- | --- |
| **Statements** |  | **Frequency (n = 80)** | **Percentage (%)** |
| Inadequate Hygiene education | Agreed | 75 | 93.75 |
| Not sure | 2 | 2.5 |
| Disagreed | 3 | 3.75 |
| Neglect of Health facilities | Agreed | 76 | 95 |
| Not sure | 2 | 2.5 |
| Disagreed | 2 | 2.5 |
| Insufficient water supply | Agreed | 75 | 93.75 |
| Not sure | 0 | 0 |
| Disagreed | 5 | 6.25 |
| Inadequate toilet/latrine facilities | Agreed | 45 | 56.25 |
| Not sure | 8 | 10 |
| Disagreed | 27 | 33.75 |
| Lack of dustbins for disposing wastes like biscuit wraps | Agreed | 52 | 65 |
| Not sure | 7 | 8.75 |
| Disagreed | 21 | 26.25 |
| Throwing rubbish anywhere in the compound | Agreed | 48 | 60 |
| Not sure | 8 | 10 |
| Disagreed | 24 | 30 |
| Inadequate Funds to provide sanitation equipment | Agreed | 59 | 73.75 |
| Not sure | 2 | 2.5 |
| Disagreed | 19 | 23.75 |
| Poor waste storage methods adopted | Agreed | 79 | 98.75 |
| Not sure | 0 | 0 |
| Disagreed | 1 | 1.2 |

***Source: Primary Data (2019)***

Table 4.5 above show that majority of study respondents (93.75%) agreed with inadequate hygiene education, 3.75% of them disagreed while 2.5% of them were not sure. This implies that the inadequate hygiene education is one of the major causes of poor sanitation among children. This creates health problems for children in Yei River State and causes such as diarrhea diseases among children.

Furthermore, the results indicate majority of the respondents (95%) agreed with neglect of health facilities, 2.5% of the study respondents disagreed, 2.5% of the respondents were not sure. This implies that neglect of health facilities is also a cause of poor sanitation in Yei River State, South Sudan. Results also show that most respondents (93.75%) agreed with insufficient water supply while 6.25% of them disagreed, no respondent were not sure implying that in Yei River State there is limited water supply in most areas and this has created poor sanitation in the area which has affected deteriorating child health.

The study findings as indicated in the table above indicate that majority of the respondents (56.25%) agreed inadequate toilet/latrine facilities, while 33.75% of them disagreed, 10% of the respondents were not sure. However, most of the responses were positive implying that as a result of the inadequate toilet/latrine facilities in Yei River State, there’s poor sanitation in the area. More so, most respondents (65%) agreed with lack of dustbins for disposing wastes like biscuit wraps, 26.25% of the respondents disagreed, 8.75% of the respondents were not sure. However, from the results most of the respondents were on a positive side implying in some areas in Yei River State, there is lack of dustbins for disposing wastes like biscuit wraps which has created poor sanitation in the area and led to poor health among children.

Results in Table 4.5 show that majority of the study respondents (60%) agreed with throwing rubbish anywhere in the compound, while 30% of them agreed, a significant percentage (10%) were not sure while (92%) of the respondents agreed with inadequate funds to provide sanitation equipment, while 4% of them disagreed, 4% of the respondents were not sure. To add on this, 98.75% of the respondents agreed with poor waste storage methods adopted, 1.2% of them disagreed while none of them were not sure. Therefore, poor sanitation is also caused by poor waste storage techniques, inadequate funds to provide sanitation equipment and throwing rubbish anywhere in the compound which leads to poor health among children.

In conclusion, the main causes of poor sanitation are inadequate hygiene education, neglect of health facilities, insufficient water supply, inadequate toilet/latrine facilities, lack of dustbins for disposing wastes, throwing rubbish anywhere in the compound, inadequate funds to provide sanitation equipment and poor waste storage methods adopted.

**4.2.4. How Sanitation Practices affect Children’s Health in Yei River State.**

Objective two was meant to investigate how sanitation practices affect children’s health in Yei River State. The findings are shown in Table: 4.6 below:

# Table 4.6: How Sanitation Practices affect Children’s Health in Yei River State

|  |  |  |  |
| --- | --- | --- | --- |
| **Statements** |  | **Frequency (n = 80)** | **Percentage (%)** |
| Poor sanitation can cause diarrhea for children | Agreed | 50 | 62.5 |
| Not sure | 12 | 15 |
| Disagreed | 18 | 22.5 |
| Poor sanitation can cause typhoid for children | Agreed | 52 | 65 |
| Not sure | 16 | 20 |
| Disagreed | 12 | 15 |
| Poor sanitation can cause cholera for children | Agreed | 60 | 75 |
| Not sure | 8 | 10 |
| Disagreed | 12 | 15 |
| Poor sanitation can lead to malaria | Agreed | 70 | 87.5 |
| Not sure | 4 | 5 |
| Disagreed | 6 | 7.5 |
| In extreme cases, poor sanitation can lead to child mortality | Agreed | 72 | 90 |
| Not sure | 4 | 5 |
| Disagreed | 4 | 5 |

***Source: Primary Data (2019)***

According to the Table 4.6 above, most of the respondents (62.5%) of the respondents agreed with poor sanitation can cause diarrhea for children, 22.5% of them disagreed and only 15% of them were not sure. While 65% of the respondents agreed with poor sanitation can cause typhoid for children, 15% of the respondents disagreed, 20% of the respondents were not sure. In addition, (75%) of respondents agreed with grants poor sanitation can cause cholera for children, 15% of them disagree, 10% of the study respondents were not sure. Furthermore, results indicated that (82.5%) agreed with poor sanitation can lead to malnutrition in children, 87.5% agreed with poor sanitation can lead to malaria and 90% noted that in extreme cases, poor sanitation can lead to child mortality. This shows that the effects of poor sanitation on students’ health include diarrhea for students, typhoid, cholera, malaria and student mortality in extreme cases.

**4.2.5. Strategies that could be employed to enhance Sanitation Practices among Children in Yei River State.**

Objective three was meant to find out the strategies that could be employed to enhance sanitation practices among children in Yei River State. The findings are shown in Table: 3:

# Table 4.7: Strategies that could be employed to enhance Sanitation Practices among Children in Yei River State.

|  |  |  |
| --- | --- | --- |
| **Category** | **Mean (X)** | **Standard Deviation (SD)** |
| Need for environmental sanitation research | 2.90 | 0.62 |
| The need for the community to undertake hygiene education | 3.55 | 0.64 |
| More health workers should be trained to include sanitation practices counselling into their consultations with patients | 3.48 | 0.78 |
| More toilets should be put in place to add on the existing ones to reduce incessant urination and faecal deposit | 3.39 | 0.77 |
| Local government should source for more funds from local and international levels which would be used for providing sanitation facilities | 3.42 | 0.79 |
| Waste disposal vehicles should be procured so that waste can safely be removed. | 3.37 | 0.79 |
| Partnership should be established with private agencies to help convert waste to wealth through waste reduction, reuse and recycling. | 3.32 | 0.74 |
| Regular seminars should be organized on the need for sanitation. | 3.47 | 0.66 |
| Regular inspection around the community | 3.47 | 0.77 |

***Source: Primary Data (2019)***

From table 4, all the items were accepted showing that the respondents agree that all the items mentioned are strategies that can be adopted to improve sanitation practices in the Yei River State, South Sudan. The SD ranged from 0.62-0.79 which showed that the respondents are not too far from each other in their responses. Therefore, the strategies that can be adopted to improve sanitation and also improve child health include need for environmental sanitation research, the need for the community to undertake hygiene education, more health workers should be trained to include sanitation practices counselling into their consultations with patients, more toilets should be put in place to add on the existing ones to reduce incessant urination and faecal deposit.

More so, the local government should source for more funds from local and international levels which would be used for providing sanitation facilities, waste disposal vehicles should be procured so that waste can safely be removed, partnership should be established with private agencies to help convert waste to wealth through waste reduction, reuse and recycling, regular seminars should be organized on the need for sanitation and regular inspection around the community.

# CHAPTER FIVE

# SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

# 5.0. Introduction

This chapter presents the summary, conclusion and recommendations of the study carried out on the study under investigation.

# 5.1 Summary of Findings

**5.1.1. Factors Contributing to Poor Sanitation Practices in Yei River State.**

Findings from Table 4.5 revealed indicate that the factors that influencing poor sanitation are inadequate hygiene education, neglect of health facilities, insufficient water supply, inadequate toilet/latrine facilities, lack of dustbins for disposing wastes, throwing rubbish anywhere in the compound, inadequate funds to provide sanitation equipment and poor waste storage methods adopted.

**5.1.2. How Sanitation Practices affect Children’s Health in Yei River State.**

According to results in Table 4.6, the effects of poor sanitation on children’s health include children being affected by diarrhea, typhoid, and children falling sick due to cholera infection, children being sick due to malaria and children mortality in extreme cases.

**5.1.3. Strategies that could be employed to enhance Sanitation Practices among Children in Yei River State.**

From findings in Table 4.7, Finally, the ways in which sanitation practices can be improved include; need for environmental sanitation research, the need for hygiene education, more health workers should be trained to include sanitation practices counselling into their consultations with patients, more toilets should be put in place in strategic locations to complement the existing ones to reduce incessant urination and faecal deposit, local government should source for more funds from local and international levels which would be used for providing sanitation facilities, waste disposal vehicles should be procured so that waste can safely be removed, Partnership should be established with private agencies to help convert waste to wealth through waste reduction, reuse and recycling, regular seminars should be organized on the need for sanitation and regular inspection around the community should be done to improve sanitation.

# 5.2. Conclusion

Sanitation is necessary in all places in the community. However, it has been observed to be poor in Yei River State which is a result of a number of factors such as inadequate hygiene education, neglect of health facilities, insufficient water supply, inadequate toilet/latrine facilities, lack of dustbins for disposing wastes, throwing rubbish anywhere in the compound, inadequate funds to provide sanitation equipment and poor waste storage methods adopted. Poor sanitation has led to negative effects on children’s health and its manifested in children being sick due to diseases like malaria, cholera, diarrhea, and even death in extreme cases. Due to these negative effects, communities have devised means of ensuring proper sanitation. These ways include employing cleaners to keep the environment clean and encouraging people to undertake research in environmental sanitation. However, these aren’t enough to ensure proper sanitation.

# 5.3. Recommendations

Based on the study findings, the following recommendations were made;

1. Household members should mainly be sensitized by word of mouth (face to face) and direct participatory interaction and sensitization, and train local leaders about sanitation and hygiene since people believe and trust local leaders in the community.
2. NGOs and CBOs working in the region should consider undertaking sanitation and hygiene promotion activities as part of their development strategies and integrating them in their plans.
3. Community health workers should be deployed in communities in order to give information on a continued and sustainable basis on hygiene and sanitation issues.
4. There is need to explore further the use of radio for giving information much more extensively on health and sanitation in the region, and to give support where necessary for radio sets to be availed to community groups.

# 5.4. Areas for further studies

The researcher recommends that the following studies be carried out:

1. Effect of sanitation practices on health of students in schools
2. Sanitation and women’s health problems in rural areas

# REFERENCES

Adelakun, C.O. (2003). *Preliminary Literature Study to a School Sanitation and Hygiene Education (SSHE) Strategy*.

Barreto, D. (2007). *Workshop on water supply, sanitation and health at schools and local communities in West Africa*.

Black, E.B., Vandervoorden, C. &Peal, A. (2010). *Public Funding for Sanitation - The many faces of sanitation subsidies*. Geneva, Switzerland: Water Supply and Sanitation Collaborative Council.

Cairncross, O.H. (2013). *Sustainable solid waste management in developing countries*. Proceedings of the second High-level Meeting on Health and Environment in ASEAN and East Asian Countries, Bangkok.

Elledge, B., & Sanni, M.M. (2015). An examination of environmental sanitation and its health hazards in the polytechnic, Ibadan. *Academic Journal of Interdisciplinary studies, 4*(1), 47-56.

Fayehun, S. (2010 1). *15 diseases India can stamp out by improving sanitation*. Hindu Times.

Gasana, S.M. (2012). *The worth of school sanitation and hygiene education (SSHE) Case studies*.

Guerrant, Tilley, E., Ulrich, L., Lüthi, C., Reymond, Ph. &Zurbrügg, C. (2010). *Compendium of Sanitation Systems and Technologies*. (2nd ed.). Duebendorf, Switzerland: Swiss Federal Institute of Aquatic Science and Technology (Eawag).

Hotez, S. (2007) *Towards more sustainable sanitation solutions.*

Lanata, A.S (2005) *Breaking the sanitation barriers; WHO Guidelines for excreta use as a baseline for environmental health*. Ecosan Conference, Durban, South Africa from 23-26.

Ministry of Health (2009). Annual Health Sector Performance Report

Mshelia, Y. (2015). *Advancing Environmental Health for Disease Prevention:* Past Experience and Future Priorities. Lessons Learned from EHP

World Health Organization & UNICEF (2012). *Progress on drinking water and sanitation*: *Update.* United States: WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation.

World Health Organization (2007). *The World Health Report 2007. A safer future*. Retrieved from: http:/who.int/whr/2007/ en/index.htm. Accessed on 25 August, 2016.

# APPENDICES

# APPENDEX I: QUESTIONNAIRE

Dear Sir/Madam,

I am a student of the Africa Institute for Project Management Studies, pursuing Diploma of in Water Sanitation and Hygiene. I am carrying out a study on the “*effect of sanitation on child health: case study of Yei River State, South Sudan* as part of the requirement for the completion of my course. You have been selected to be part of this study. The success of this study therefore depends on your kind of co-operation. I kindly request you to participate in the study to provide me with the necessary information needed. The study is purely for academic purpose and all the information provided will be kept confidential.

Tick in the box or write down the answer if necessary.

**SECTION A: BIO DATA**

1. Sex
2. Male
3. Female
4. Age (optional)
5. Below 20years
6. 20 -30 years
7. 30 - 40 years
8. Above 40 years

3. Education level

1. PHD
2. Masters
3. Degree
4. Diploma
5. Certificate

Others (specify)…………………………………………………………………………………

**SECTION B: FACTORS CONTRIBUTING TO POOR SANITATION PRACTICES**

Rate your degree of agreement to the following statements based on the factors contributing to poor sanitation practices in the table below.

Tick the best option using a five point Likert scale; 1 - Strongly Agree (SA), 2- Agree (A), 3- Not Sure (NS), 4- Disagree (D), 5- Strongly Disagree (SD).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Statement** | **Responses** | | | | |
| **SA** | **A** | **NS** | **D** | **SD** |
| Inadequate Hygiene education | 1 | 2 | 3 | 4 | 5 |
| Neglect of Health facilities | 1 | 2 | 3 | 4 | 5 |
| Insufficient water supply | 1 | 2 | 3 | 4 | 5 |
| Inadequate toilet/latrine facilities | 1 | 2 | 3 | 4 | 5 |
| Lack of dustbins for disposing wastes like biscuit wraps | 1 | 2 | 3 | 4 | 5 |
| Throwing rubbish anywhere in the compound | 1 | 2 | 3 | 4 | 5 |
| Inadequate Funds to provide sanitation equipment | 1 | 2 | 3 | 4 | 5 |
| Poor waste storage methods adopted | 1 | 2 | 3 | 4 | 5 |

Others please specify

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

**SECTION C: HOW SANITATION PRACTICES AFFECT CHILDREN’S HEALTH**

Rate your degree of agreement to the following statements based on how sanitation practices affect children’s health. Indicate how much you agree or disagree with each statement by ticking on the appropriate option.

Tick the best option using a five point Likert scale; 1 - Strongly Agree (SA), 2- Agree (A), 3- Not Sure (NS), 4- Disagree (D), 5- Strongly Disagree (SD).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Statement** | **Responses** | | | | |
| **SA** | **A** | **NS** | **D** | **SD** |
| 1. Poor sanitation can cause diarrhoea for children | 1 | 2 | 3 | 4 | 5 |
| 1. Poor sanitation can cause typhoid for children | 1 | 2 | 3 | 4 | 5 |
| 1. Poor sanitation can cause cholera for children | 1 | 2 | 3 | 4 | 5 |
| 1. Poor sanitation can lead to stunted growth in children | 1 | 2 | 3 | 4 | 5 |
| 1. Poor sanitation can lead to malnutrition in children | 1 | 2 | 3 | 4 | 5 |
| 1. Poor sanitation can lead to malaria | 1 | 2 | 3 | 4 | 5 |
| 1. In extreme cases, poor sanitation can lead to child mortality |  |  |  |  |  |

Others please specify

……………………………………………………………………………………………………………………………………………………………………………………………………

**SECTION C: STRATEGIES THAT CAN BE EMPLOYED TO ENHANCE SANITATION PRACTICES AMONG CHILDREN**

What strategies can be adopted to enhance sanitation practices among children?

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**THANK YOU FOR YOUR VALUABLE INFORMATION**