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

**BY**

**ABRAHAM MAYUOM CHOL GAAK.**

**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 Stretegia Netherland,department of Water Hygiene and Sanitation( WASH).

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**DEDICATION**

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

**ACKNOWLEDGEMENT**

First and foremost, praise be to God for providing me with fullness of life and wellbeing that

enabled me to finish my course, and my special thanks goes to **Dr Barry suckling and his wife Ginny** from New Zeland, Austrialia for their special financial support without them I would have not done this course.

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**TABLE OF CONTENTS**

DECLARATION----------------------------------------------------------------------------------------------ii

DEDICATION------------------------------------------------------------------------------------------------iii

ACKNOWLEDGEMENT ----------------------------------------------------------------------------------iv

TABLE OF CONTENTS------------------------------------------------------------------------------------v

LIST OF TABLES------------------------------------------------------------------------------------------vii

LIST OF FIGURES----------------------------------------------------------------------------------------viii

LIST OF ACRONYMS--------------------------------------------------------------------------------------x

OPERATIONAL DEFINITIONS --------------------------------------------------------------------------x

**CHAPTER ONE**

**INTRODUCTION OF THE STUDY**

1.1. Introduction ----------------------------------------------------------------------------------------------1

1.2 Background of the study---------------------------------------------------------------------------------1

1.3 Statement of the Problem--------------------------------------------------------------------------------4

1.4 Objectives of the Study ----------------------------------------------------------------------------------4

1.5 Research Questions --------------------------------------------------------------------------------------5

1.6 Significance of the Study -------------------------------------------------------------------------------5

1.7 Limitation of the Study-----------------------------------------------------------------------------------5

1.8 Scope of the study----------------------------------------------------------------------------------------6

**CHAPTER TWO**

**LITERATURE REVIEW**

2.1 Introduction -----------------------------------------------------------------------------------------------7

2.2 Review of Theoretical Literature ----------------------------------------------------------------------7

2.3 Review of Critical Literature --------------------------------------------------------------------------13

2.4 Summary of Gaps to be filled -------------------------------------------------------------------------14

2.5 Conceptual Framework --------------------------------------------------------------------------------14

**CHAPTER THREE**

**METHODOLOGY**

3.0 Introduction ----------------------------------------------------------------------------------------------15

3.1 Research Design ----------------------------------------------------------------------------------------15

3.2. Study Area-----------------------------------------------------------------------------------------------15

3.3 Study Population----------------------------------------------------------------------------------------16

3.4 Sample size ----------------------------------------------------------------------------------------------16

3.5 Sampling methods---------------------------------------------------------------------------------------17

3.6 Sources of Data -----------------------------------------------------------------------------------------18

3.7 Data Collection Instruments --------------------------------------------------------------------------18

3.8 Quality control of instrument--------------------------------------------------------------------------19

3.9. Data analysis--------------------------------------------------------------------------------------------19

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction ----------------------------------------------------------------------------------------------21

4.2 Presentation of Findings -------------------------------------------------------------------------------21

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0. Introduction ---------------------------------------------------------------------------------------------30

5.1 Summary of Findings-----------------------------------------------------------------------------------30

5.2. Conclusion ----------------------------------------------------------------------------------------------31

5.3. Recommendations--------------------------------------------------------------------------------------31

5.4. Areas for further studies ------------------------------------------------------------------------------31

REFERENCES ----------------------------------------------------------------------------------------------32

APPENDICES -----------------------------------------------------------------------------------------------34

APPENDEX I: QUESTIONNAIRE----------------------------------------------------------------------34

LIST OF TABLES

Table 3.1 Target Population -------------------------------------------------------------------------------16

Table 3.2: Sample Size--------------------------------------------------------------------------------------17

Table 4.1 Response Rate------------------------------------------------------------------------------------21

Table 4.2: Showing Gender of Respondents-------------------------------------------------------------22

Table 4.3: Showing Age range of Respondents---------------------------------------------------------23

Table 4.4: Showing Education of Respondents----------------------------------------------------------24

Table 4.5: Factors Contributing to Poor Sanitation Practices i. ---------------------------------------25

Table 4.6: How Sanitation Practices affect Children’s Health ----------------------------------------27

Table 4.7: Strategies that could be employed to enhance Sanitation Practices among Children. 28

LIST OF FIGURES

Figure 4.1: Response Rate----------------------------------------------------------------------------------21

Figure 4.2: Showing Gender of Respondents------------------------------------------------------------22

Figure 4.3: ShowingAge range of Respondents---------------------------------------------------------23

Figure 4.4: Showing Level of educationof Respondents-----------------------------------------------24

**LIST OF ACRONYMS AND ABBREVIATIONS**.

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

GVN Green Village Network.

GARD Greater Action for Relief and Development.

CUAMM Doctors with Africa.

**OPERATIONAL DEFINITIONS**

**Sanitation** is the collection, transport, treatment and disposal or reuse of human excreta,

domestic waste water 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 Gok State-Cueibet, 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 as well as in Cueibet main town market 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, CBOs like **Green** **Village Network** ( **GVN**) and **Greater Action for Relief and Development** (**GARD**) who were undertaking sanitation and hygiene promotion activities using Particpatory Hygiene and Sanitation Transformation ( PHAST) training in the community as part of their development strategies and integrating them in their plans.NGOs like **“Doctor with Africa “CUAMM”** and working in the region should consider Hygiene promotion messages during their health education in their various health facilities.

**CHAPTER ONE**

**INTRODUCTION OF THE STUDY**

**Overview**

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 nearest future that may lead into better improvement.

**1.2 Background of the study**

**Sanitatio**n 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 propersanitation, 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.Gok State, South Sudan is one of the 28 states of South Sudan. It was formed following the split up of Sudan and it is located in the Bhar El Gazal region and it borders Tonj State to the West, Western Lakes state to the east, and Yambio State to the South west .

Gok State, was part of the former Lakes state with an estimated population of **117,755** as per 2008 census.

The state consists of 9 counties. The counties are Cueibet County , Joth Mayar County, Abiriu County, Duony County, Wat-Adol County, Anyar-Nguan County, Citcok County, Ngap County and Malou-pec County. The area around Gok State receives inadequate rainfall year-round, which can’t allow them for the cultivation of food and cash crops, therefore the people within are cattle keepers and farmers.

Sogrhum and groundnut are the main crops grown in the area.

The road network to neighboring cities and towns are very poor. For example, the road between Rumbek and Cueibet as well as Cueibet to Tonj Road has not been repaired.

Gok State- Cueibet has no Airport but with small market that supplies the 9 Counties markets.

**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 abouts 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 in Gok 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 Netherlands through its Ambassy to South Sudan has invest large amounts of money in Water hygiene and sanitation WASH programe by training Community Hygiene Clubs (CHCs) on Hyiene promotion of which i **(Researcher**) was a part of it as hygiene promotion trainer. The training results and achievements are not very encouraging because it was a piloting project which has not cover the whole state. 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 Gok State -Cueibet, South Sudan.

**1.4.2 Specific Objectives**

i. To determine the factors contributing to poor sanitation practices in Gok State.

ii. To investigate how sanitation practices affect children’s health in Gok State.iii. To find out the strategies that could be employed to enhance sanitation practices among children in Gok State.

**1.5 Research Questions**

i. What factors contribute to poor sanitation practices in Gok State?

ii. How do sanitation practices affect children’s health in Gok State?

iii. What strategies can be employed to enhance sanitation practices among children in

Gok 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 Gok state .

**1.6.2. Gok State**

Gok 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 Gok 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 September – October 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.

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).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).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 Gok 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 laboring 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).

**2.3 Review of Critical Literature**

In Zimbabwe, Moyo, Makoni and Ndamba found 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 Gok 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**

|  |
| --- |
| **CHILD HEALTH** |

**Independent variable Dependent**

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

|  |
| --- |
| Intervening variables  Condition of the environment  Government policy  Knowledge, attitudes, values |

**Source: Author: 2019**

**CHAPTER THREE**

**METHODOLOGY**

**3.0 Overview**

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 Gok State-Cueibet, South Sudan which is one of the 28 states of South Sudan. It was formed following the split up of Ten State of South Sudan and it is located in the Bhar El Gazal region and it borders Tonj State to the West, Western Lakes state to the east, and Yambio State to the South west . Gok State, was part of the former Lakes state with an estimated population of **117,755 as per 2008 census**.The state consists of 9 counties. The counties are Cueibet County , Joth Mayar County, Abiriu County, Duony County, Wat-Adol County, Anyar-Nguan County, Citcok County, Ngap County and Malou-pec County.

**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.

Where,

S = required sample size.

= 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 | 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).**

**3.5 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 18 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.

**3.6.2 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 So you used two sampling procedures You need to tell us the years when this reports were published 19 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 how did you collect data from the secondary sources, which instruments did you use 20 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 |
| Resonse | 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**

|  |  |  |
| --- | --- | --- |
| Category | Frequency | Percentage |
| Males | 46 | 57 |
| Females | 34 | 43 |
| **Total** | **80** | **100** |

Source: Primary Data (2019)

**Figure 4.2: Showing Gender of Respondents**

Source: Primary Data (2019)

**4.2.3. Factors Contributing to Poor Sanitation Practices in Gok State - Cueibet.**

Objective one was meant to determine the factors contributing to poor sanitation practices in

Gok State. The findings are shown in Table: 4.5:

**Table 4.5: Factors Contributing to Poor Sanitation Practices in Gok State.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statements** |  | **Frequency (n = 80)** | **Percentage (%)** |
| Inadequate Hygiene education | Agreed | 78 | 97.5 |
| Not sure | 2 | 2.5 |
| Disagreed | 0 | 0 |
| Neglect of Health facilities | Agreed | 75 | 93.75 |
| Not sure | 3 | 3.75 |
| Disagreed | 2 | 2.5 |
| Insufficient water supply | Agreed | 76 | 95 |
| Not sure | 1 | 1.25 |
| Disagreed | 3 | 3.75 |
| Inadequate toilet/latrine facilities | Agreed | 65 | 81.25 |
| Not sure | 2 | 2.5 |
| Disagreed | 13 | 16.25 |
| Lack of dustbins for disposing wastes like biscuit wraps | Agreed | 75 | 93.75 |
| Not sure | 5 | 6.25 |
| Disagreed | 0 | 0 |
| Throwing rubbish anywhere in the compound | Agreed | 78 | 97.5 |
| Not sure | 2 | 2.5 |
| Disagreed | 0 | 0 |
| Inadequate Funds to provide sanitation equipment | Agreed | 74 | 92.5 |
| Not sure | 6 | 7.5 |
| Disagreed | 0 | 0 |
| Poor waste storage methods adopted | Agreed | 79 | 98.75 |
| Not sure | 1 | 1.25 |
| Disagreed | 0 | 0 |

**Source: Primary Data (2019**)

Table 4.5 above show that majority of study respondents (97.5%) agreed with inadequate

hygiene education, 0.0% 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 Gok State and causes such as diarrhea diseases among children.

Furthermore, the results indicate majority of the respondents (93.75%) agreed with neglect of health facilities, 2.5% of the study respondents disagreed, 3.75% of the respondents were not sure.

**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 as well as in Gok state main Market, inadequate funds to provide sanitation equipment and poor waste storage methods adopted by the resident was also contributining factor.

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

Objective two was meant to investigate how sanitation practices affect children’s health in

Gok State. The findings are shown in Table: 4.6 below

|  |  |  |  |
| --- | --- | --- | --- |
| **Statements** |  | **Frequency (n = 80)** | **Percentage (%)** |
| Poor sanitation can cause diarrhea for children | Agreed | 40 | 50 |
| Not sure | 25 | 31.25 |
| Disagreed | 5 | 6.25 |
| Poor sanitation can cause typhoid for children | Agreed | 50 | 62.5 |
| Not sure | 21 | 26.25 |
| Disagreed | 9 | 11.25 |
| Poor sanitation can cause cholera for children | Agreed | 52 | 65 |
| Not sure | 18 | 22.5 |
| Disagreed | 10 | 12.5 |
| Poor sanitation can lead to malaria | Agreed | 60 | 75 |
| Not sure | 16 | 20 |
| Disagreed | 4 | 5 |
| In extreme cases, poor sanitation can lead to child mortality | Agreed | 70 | 87.5 |
| Not sure | 8 | 10 |
| Disagreed | 2 | 2.5 |

**Source: Primary Data (2019**)

According to the Table 4.6 above, most of the respondents (50%) of the respondents agreed

with poor sanitation can cause diarrhea for children, 6.5% of them disagreed and only 31.25%

of them were not sure. While 62.5% of the respondents agreed with poor sanitation can cause

typhoid for children, 11.25% of the respondents disagreed, 26.5% of the respondents were not

sure. In addition, (65%) of respondents agreed with grants poor sanitation can cause cholera

for children, 12.5% of them disagree, 22.5% of the study respondents were not sure.

Furthermore, results indicated that (75%) agreed with poor sanitation can lead to

malaria and 87.5% 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.

**5.1.2. How Sanitation Practices affect Children’s Health in Gok 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.

**4.2.5. Strategies that could be employed to enhance Sanitation Practices among**

**Children in Gok State**.

Objective three was meant to find out the strategies that could be employed to enhance

sanitation practices among children in Gok State. The findings are shown in Table: 3:

**Table 4.7: Strategies that could be employed to enhance Sanitation Practices**

**among Children in Gok 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 Gok 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 consultationswith

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 Gok 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 Gok 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 Gok 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 Gok 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.

1. 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.

1. Community health workers should be deployed in communities in order to give

information on a continued and sustainable basis on hygiene and sanitation issues.

1. 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

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**APPENDICES**

**APPENDEX I: QUESTIONNAIRE**

Dear Sir/Madam,

I am a student of the Stretagia Netherlands collegue, pursuing Diploma of

Water Sanitation and Hygiene. I am carrying out a study on the “effect of sanitation on child

health: a case study of Gok State, South Sudan as part of the requirement for the

completion of my course that i 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.

**SECTION A: 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** |
| 1 | 2 | 3 | 4 | 5 |
| 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 B: 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** |
| a) Poor sanitation can cause diarrhoea for children | 1 | 2 | 3 | 4 | 5 |
| b) Poor sanitation can cause typhoid for children | 1 | 2 | 3 | 4 | 5 |
| c) Poor sanitation can cause cholera for children | 1 | 2 | 3 | 4 | 5 |
| d) Poor sanitation can lead to stunted growth in children | 1 | 2 | 3 | 4 | 5 |
| e) Poor sanitation can lead to malnutrition in children | 1 | 2 | 3 | 4 | 5 |
| f) Poor sanitation can lead to malaria | 1 | 2 | 3 | 4 | 5 |
| g) In extreme cases, poor sanitation can lead to child mortality | 1 | 2 | 3 | 4 | 5 |

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?

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…………………………………………………………………………………………………

…………………………………………………………………………………………………

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**THANK YOU FOR YOUR VALUABLE INFORMATION**