UNIVERSITY FOR DEVELOPMENT STUDIES

ASSESSING THE INFLUENCE OF COMMUNITY LED TOTAL SANITATION PROGRAMME AS AN INOVATION TO ENDING OPEN DEFECATION IN THE KUMBUNGU DISTRICT AREA OF GHANA

BY

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DECLARATION

Student

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

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Supervisor

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ABSTRACT

This thesis assesses the impact of CLTS programme as an innovation to ending open defecation in the Kumbungu District area of Ghana. The research sampled respondents using purposive sampling and convenience sampling technique was employed. Data were collected using questionnaire, observation and field notes. Major findings in the study revealed that; latrines are simply lacking and the few which are there are either poorly taken care of or over shared with several households with its attended possibility of increasing sanitation related diseases if proper maintenance of such latrines is not taken serious. Research has also established that evidence of knowledge of safe ways of disposal is there but such knowledge is too scanty and leads to poor adherence to precautions by adults to safe regulations and expert advice to safe child - stool handling. Sanitation situation in the households and community has improved positively since the last two years ie (from 2014 - 2016) translated into reduction of incidence of sanitation related diseases. Lastly, numerous efforts have also been employed by the communities and households to improve sanitation with regards to the ending of open defecation.

The study recommends that, the District Assembly should work hand in hand with the District environmental office to come out with sanitation models which will have household heads supporting the construction of latrines in their home without necessarily giving out physical cash i.e.; digging the pits or doing some labor work in the construction process so that they are able to own the projects. With the current wave of environmental awareness, many non-governmental organizations are in the system helping communities to construct very affordable in-house latrines. Such NGOs should be wooed to the area to help in bridging the latrine deficit i.e., SNV. The community heads through their development agents should collaborate with Kumbungu District Assembly and other stake holders in the sanitation sector to institute some bye-laws and making the construction of latrines in the new houses springing up in the study area compulsory and enforcing same. Again, the district assembly can equally include in the bye-laws some time lines for the existing households to construct latrines in them and indicating fines that will be meted to household heads who will default at the end of the day. All public institution within the study area must make the construction of place of convenience (toilet) their responsibility before they commence operation.

The environmental and sanitation officers in the study area should up their work to insure every house will at least dig and always bury their refuse to make the environment clean.

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DEDICATION

This thesis is dedicated to my parents (**Abdullai Alhaji Iddi and Alhaji Fuseini Amina**), my dear wife (**Mrs Razak Hushama**) and my master (**Mr**. **Mohammed Saaka**) for their support to bringing me this far.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Sanitation generally refers to the provision of facilities and services for proper disposal of human waste (urine and faeces). Open defecation on the other hand is the practice of removing waste from the human body through the anus outside in and around one's local community or environment as a result lack of access to good toilets facilities, latrines or any kind of improved sanitation (WHO, 2017).

The United Nations Conference on Water in 1977 made a decade declaration called International Drinking Water and Sanitation Decade with the aim of making available quality sanitation for all (Black and Fawcett, 2009). Regardless of this effort, most attention was placed on water supply and at the end of the decade there were 300 million people without sanitation then it was (Black and Fawcett, 2009).

The essence of good sanitation and its impact on the health and well-being of mankind is well written about. The estimation of WHO (2004) report is that, globally about 2.6 billion people do not have access to basic sanitation. Over 90% of sewage in countries that are still under developed are allowed to leave untreated(Black and Fawcett, 2009).The above therefore places open defecation and sanitation as a major developmental concern in most developing countries.

According to the WSP, (2012) report on economy, poor sanitation cost Ghana GH¢420 million. Firstly, about US$19 million is lost annually in access time. Again, persons observing defecation in the open uses 2.5 good days annually to locate private decent place

to defecate hence leading to large losses economically. Secondly, preventable deaths wipe away US$215 million annually. The report reveals that diarrhea causes the deaths of 19000 people in Ghana including 5100 children under five. Almost 90% of these deaths are caused by poor water, sanitation and hygiene. Thirdly, the report shows that, US$1.5 million is lost anytime we are sick and soliciting healthcare. Finally, the report revealed that, healthcare alone takes about US$54 million annually. It added that directly or indirectly diarrheal diseases through malnutrition are the main causes of morbidity.

It is also worth noting that several policies, strategies, programmes and practices in the provision of latrines have been adopted over the years by developing countries with each strategy yielding some level of results. In some communities, Ventilated Improved Pits (VIPs) have been provided and despite the health hazards associated with open defecation, residents continue to practice it. Generally, the construction and patronage of household latrines have been very low and this was a great threat to the attainment of the MDG7. It again threatens the attainment of goal 6 of the SDG's.

The 2012 report of water and sanitation has it that 20% of Ghana's population practice open defection. This phenomenon continues to serve as a challenge to actors within that sector including Environmental Health Directorate, MMDAs, other partners in development, community-based organization and the Private Sector. In Uganda, national sanitation coverage was 62.4% in 2008 (MoWE, 2008) and this increased to 67.4% in 2009 (Finance, 2015).

17% of households in Ghana do not have places of convenience and still use the open field for defecation. As expected, rural households are much more likely to have no toilet facilities than urban households i.e. 29 percent versus 7 percent (DHMT, 2014).

The sustainable development goal six (6) projects to achieve access to adequate and equitable sanitation and hygiene for all by the year 2030 and end open defecation with more focus on the needs of women and girls and those in vulnerable situation (UNICEF, 2018).

In many rural, peri–urban and urban towns of Uganda, sanitation facilities are not necessarily distributed equitably. Households lacking sanitation facilities are often blinded by the fact that they spend large proportion of their limited financial resources on treating sanitation related diseases and this leads to the loss of vital productive time. Mortality as a result of Diarrhoea is seen to comprise of 440 children per week in Uganda and the figures suggest that , doing very well in sanitation could bring down diarrheal diseases by 5% and child death by 50% (Survey & Indicators, 2016).

According to UNICEF (2015), only one rural household out of ten were using improved household toilets while three in every ten of them practice open defecation and not a single district in Ghana has achieved an open defecation-free status. Nineteen thousands of people in Ghana are estimated to die as a result of diarrhea, this includes 5,100 children under five - nearly 90 % of this is attributed directly to poor water, sanitation and hygiene. The incident of open defecation in Ghana is a fact and is now in an alarming state. Recent figures point to the fact that quarter (1/4) of the population in Ghana do not use latrine facilities. It is scary to note that majority of basic schools in the villages do not also have

sanitation facilities such as toilets and urinal facilities which is making the situation mandatory for both students and stuff to have no option than the nearby bush for open defecation. This act exposes their lives to danger, i.e. snake bites. With the above practice, it is not again surprising that Ghana failed to meet the MDGs now SDGs. Research done by UNICEF (2015) has revealed that, the availability and usage of improved sanitation in Ghana is 15% against MDGs of 54% by end of year 2015.

Per the Government of Ghana (GoG) Compact on Sanitation and Water for All (M.O.F, 2010), the country is off–track in attaining the MDG target on sanitation and has to raise coverage from 18% in 2008 to 61.5% in 2015 for urban areas and from 7% in 2008 to 55% in 2015 for rural areas. Generally, Ghana's population nationwide using improved sanitation as at 1990 and 2008 was 7% and 13% respectively falling far short of the 54% target of the MDG 7 on sanitation by 2015 and now SDGs.

The Ghana Compact on Sanitation and Water for All in the year 2010 has it that rural and urban sanitation coverage from 1990 to 2008 in Ghana has been woefully slow and this serves as a great threat in attainment of the MDG as far as Water and sanitation is concerned. In 1990, rural sanitation coverage was 4% and this increased to 5% in 1995 and remained so in 2000 and in 2005, it increased to 6% and to 7% in 2008.

Progress in urban sanitation is equally nothing to write home about. In 1990, urban sanitation coverage was 11% and this rose slightly to 13% and 15% in 1995 and 2000 respectively and further went up slightly to 17% and 18% in 2005 and 2008 respectively. This obviously has repelling effects on the attainment of the MDG 4, 5 and 6 which are basically health related.

WHO & UNICEF (2010) report indicates that, 22% and 20% of the population of Ghana practiced open defecation as at 1990 and 2008 respectively in spite of the numerous behavioral change campaigns and this represents a slight improvement of 2% over a long period of 18 years. The report also indicates that as at 2008, 13% of the country's population used unimproved sanitation facilities and 54% use shared sanitation facilities. The report in real figures indicates that 10.9 million and 9.6 million of the rural and urban population respectively are not served with sanitation facilities.

There is a direct correlation between poor state of sanitation and the health state of the people.

The poor state of sanitation of the country has a direct relation with the health status of the population. The G.H.S (2016) Factsheet says that, malaria and diarrhea are the first and fourth major reasons for mortality among children who are below the age of five which accounts for 26% & 9% respectively in 2008. The report also reveals that malaria and diarrhea in 2002 accounted for 11% and 5% respectively of all deaths of all age categories in the country. The 2010 Factsheets of Health Statistics further revealed that a total expenditure of 7.2% and 8.3% of Ghana's Gross Domestic Product (GDP) in 2000 and 2007 respectively were expended in the health sector. It is interesting to note that, direct relationship does exist between improved sanitation and improved health, the percentage of total expenditure of GDP on health far exceeds the government's 0.5% commitment of total expenditure of GDP on sanitation. This implies Ghana focuses more on curative health care than on preventive health care.

1.2 The Context

CLTS is an approach that changes the mind set of people in our communities to help eradicate defecating in the open. This approach has brought to bear the understanding that having a toilet facility is not a panacea to using same or will translate to quality sanitation situation and hygiene. As a new initiative, the attention is on effecting behavioral change that is required for real and sustainable improvement.

This approach succeeds by ensuring that the people get much education on the need to have open defecation free even if minority continues to defecate in the open everyone is at risk of diseases. CLTS conscientises the community members to develop the collective desire for change, spurs them into action and encourages innovation, mutual support, social sanctions and appropriate local solutions, thus leading to greater ownership and sustainability. In 1999 CLTS was first developed in Bangladesh. The immediate successes attained in mobilizing communities to collectively abandon Open Defecation have made it the most sought-after sanitation approach. CLTS has since been introduced and/or adopted in over 30 developing countries. CLTS consists of four major steps; pre-triggering, triggering, post-triggering, attainment of Open Defecation Free status and scaling up. Many countries adopted and deployed these in slightly different ways. Sometimes there are marked variations even within the same countries. Possibly, this is meant to appropriately situate CLTS in a social context and to implement it in a culturally acceptable manner. Another critical observation is the degree of successes reported and indicators of success selected by different organizations and countries (Ntow, 2014).

1.3 Problem Statement

Open defecation is probably one of the major developmental issues in Ghana and has enormous consequences. As Ghana's population hits a projected 24 million mark PHCH, (2010) and as the country has attained a lower middle-income status, a healthier and wealthier population will undoubtedly generate more waste including human excreta.

In view of this, the MLGRD formulated the Environmental Sanitation Policy which was revised in the year 2010 to provide the framework to which all actors within the sanitation sector will operate. According to the (Government of Ghana, 2010) revised Environmental Sanitation Policy, the recommended technologies for the provision of human excreta disposal facilities are the water closet and septic tank systems, the pour flush latrine, the ventilated improved pit latrine, and the aqua privy. Consequently, actors in the sector including MMDAs, NGOs, Development Partners (DPs), the Environmental Health Directorates among others have been stepping up their campaigns, management & maintenance of toilet and urinal facilities.

Recent times, NGOs and duty bearers (MMDAs) in the sanitation sub – sector are using the CLTS strategy to trigger the people living in the rural communities to respond positively by providing their own household latrines. Some Water, Sanitation and Hygiene (WASH) NGOs (i.e. SNV, UNICEF etc.) have gone on to provide VIP latrines for rural communities. Other WASH NGOs have also gone on to organize what is known as "The Sanitation Market" where various technological options for providing latrines are displayed for community members to choose the option that best fit their local conditions.

An allocation of 0.5% of GDP in 2010 was made by the GoG to support the campaign and sensitization of the implementation of CLTS across all communities in Ghana and further committed to make allocations up to a minimum threshold of 0.5% of GDP to cover capacity building for hygiene education including proper hand–washing methods, and country–wide outreach of Community–Led Total Sanitation (M.O.F, 2010).

All these efforts by the various sanitation actors are geared towards improving upon Ghana's 20% open defecation rate, 13% usage of unimproved sanitation facilities and 54% usage of shared sanitation facilities (WHO - UNICEP, 2010).

Again, even of greater interest to the researcher is the fact that the chosen District is one of the districts CLTS is been implemented since 2007 and hence will serve as a background for assessing the effectiveness or otherwise of that innovative model.

Notwithstanding the implementation of CLTS project to curb the problem of poor sanitation, sanitation is still seen to be very poor in the Kumbungu district. Going to toilet in the open and in the bush, is a common practice. Garbage and refuse are littered all around and in the major towns there are a few refuse dumps. About 10% of the population has access to build toilets. There is no cesspool emptier in the district to dislodge liquid waste in the district (DHMT - Kumbungu, 2016) Kumbungu District is ranked 8th on the third Open Defecation League Table with 28 communities attained ODF out of 130 communities (Ghana Health Service, 2016). Juxtaposing this sanitation performance to the case of Nigeria and the pilot project in Ghana, the researcher saw the need to assess the model that is currently being used to trigger and to get households lead the construction and use of

household latrines. The protocols in the CLTS model and how that can positively translate into real sanitation practices.

1.4 Research Questions

1.4.1 Main research question

Does CLTS as an innovative tool have influence in ending open defecation in Kumbungu District?

1.4.2 Specific research question

The study seeks answers to the following specific questions:

1. Do the residents in Kumbungu District construct and use toilet facilities?
2. Has there been an improvement in households and community sanitation situations?
3. What is the role of residents of Kumbungu in the change process?
4. Has the capacity of residents been used in attaining CLTS objectives?

1.5 General Objectives

To assess the influence of community let total sanitation (CLTS) as an innovation to ending open defecation in Kumbungu District.

1.5.1 Specific objectives

The specific objectives are to:

1. Establish the availability of household latrines among inhabitants of the study communities.

2. Determine the current state of household and community sanitation situations as compared to the previous years.
3. Ascertain the role of residents in the change process to attaining CLTS objectives.

1.6 Rationale of the study

An approach that makes use of mixture of innovations to ensure that ODF status is attained and consolidated. CLTS entails the act of making it easier for the community members to appreciate very well their sanitation situation, how they practice defecation, the impact of the practice and how it can result to becoming ODF(Kar etal, 2008).

This study seeks to test the influence of CLTS as an innovative approach to ending open defecation in the District. The result of the project would help health planners and program managers as well as stakeholders to improving on CLTS as an innovative approach or otherwise in dealing with the issue of OD in Kumbungu District.

1.7 Significance of the study

The broader intent of this piece of research is to ascertain the impact of CLTS as an innovation to ending open defecation in Kumbungu District. Findings of the study will be useful to Kumbungu district sanitation office and all actors in the sanitation sector in either maintaining the prevailing strategy or other wise to ensure sustainable open defecation free communities. Finally, the greater interest to the researcher is the fact that notwithstanding the implementation of CLTS in the Kumbungu district since 2007, poor sanitation is still an issue in the chosen District. Against this background, this study will wish to test the effectiveness and otherwise of this innovative model to curbing open defecation.

1.8 Scope of the study

The coverage of this research piece was five Town councils, these are: (Kumbungu town council, Gumpanarigu town council, Zangbalung town council, Vogu Area council and Gbullung town council). Five communities were randomly selected from each Town Council and questionnaires were administered to the respondents.

1.9 Organization of the Study

The study is organized into six chapters. The first chapter focuses on the background of the study, the problem statement, research questions and objectives, the significance of the study and the organization of the study. Chapter two reviews existing literature, highlighting various concepts and theories upon which the study is built. Chapter three focuses on the methodology used to conduct the study. It focuses on the sampling techniques, data collection, data analysis, and processes, ethical considerations. Chapter four comprises study outcome, data analysis and presentation of data. Chapter five is discussion which mainly focuses on linking the study findings to previous studies whiles chapter six finally presents the major findings, conclusion and recommendations.

1.10 Definition of key terms

CLTS: Community Led Total Sanitation is an innovative approach that puts more attention on change in behavior by putting the people in the community together, seeing to it that they get the requisite knowledge and understanding of the negativeness associated with defecating in the open

OD: Open Defecation is the act of defecating in the open and leaving the stuff open

ODF: Open Defecation Free is a situation where a community has no visible faeces and all households have access to and use latrines. At least 80% of households own improved latrines with hand washing facilities.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This page reviews theory and the conceptual framework which serves as the background of this research piece. The chapter equally reviews existing literature on the general sanitation situation in developing countries on how CLTS is used as an innovative tool which will serve as a panacea to curbing defecation in the open.

2.2 Community Led Total Sanitation (CLTS)

This is an innovative approach that puts more attention on change in behavior by putting the people in the community together, seeing to it that they get the requisite knowledge and understanding of the negativeness associated with defecating in the open. Again, the approach has the intention of embarking on community empowerment so that they are able to know the risks that come with environmental pollution by open defecation and to construct and use toilets with the use of their own resources (Kar, 2008). Unlike the many approaches that came before which had so much concentration on the total number of latrines that were constructed within a specific period, CLTS focuses on the use of latrines to end open defecation. The key factors in CLTS is to ensure that defecating in the open becomes a thing of the past and with sustained mobilization and follow up, the expectation is that latrines should be constructed with affordability and appropriateness of users in mind. The nature of latrine indicates that the approach promotes flexibility in terms of construction and use (Kar, 2008).

This approach is investing hugely in community mobilization getting them educated to move their focus from having individuals construct household latrines so that we are able to build open defecation free communities. This can be achieved by raising awareness that even if smaller number of people from within the community engages in defecating in the open, it exposes the lives of all the people in the community to danger or diseases. CLTS has an approach of triggering the desire of the community to change their attitude, then propels them into action and encourages mutual support and appropriate local solutions, thus which will pave way for absolute ownership and sustainability (European Union, 2016).

Kar (2008) assert that, CLTS is an approach in an integrated form towards attaining ODF in a more sustainable manner. This comprises of the facilitation of the community's examination of its sanitation situation, the way the community members defecate and its implication, how they can all put their forces together to achieve ODF.

2.3 The GoG Vision on the policy

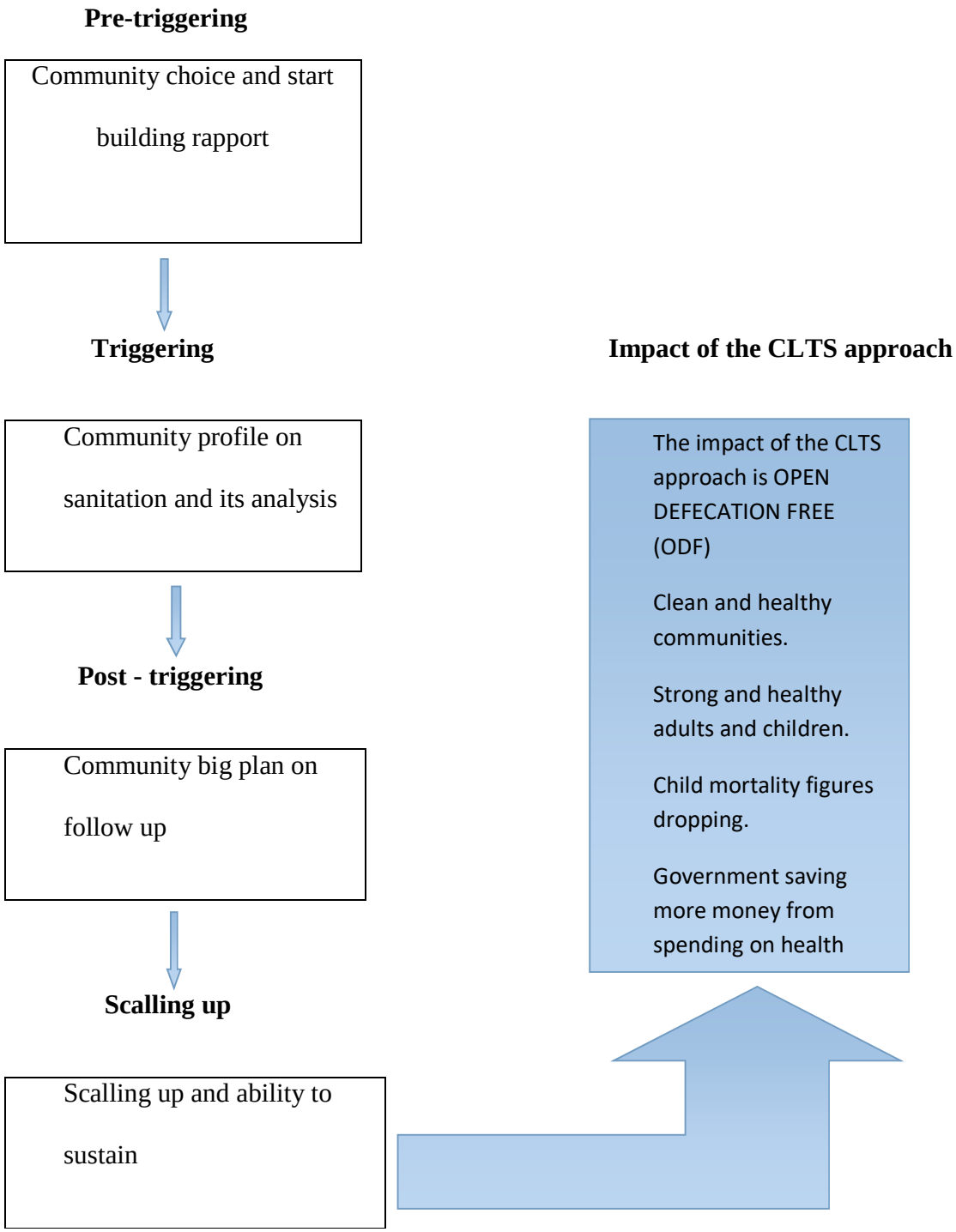
The Government of Ghana is aligned with the sanitation standards of SDG in aiming to achieve 54% not only owning but use of an improved household latrine using 2015 as a target year which will serve as the conduit to help the country to achieve 100% sanitation coverage by 2025 (SRMS, 2011).

2.3.1 GoG Policy on CLTS

The National Environmental Sanitation Policy (NESP) emphasizes the need for improve sanitation model which has value for money and to use CLTS Approach. This approach was supported by the recent GoG/UNICEF evaluation of CLTS which also recommended

improved technical capacity for latrine construction in communities facilitated by increased availability of well known, affordable and locally acceptable latrine options with the necessary materials and skills to make them (SRMS, 2011).

2.4 Conceptual Framework - CLTS as an Approach



Source: (Author, 2017)

Figure 4.1: Conceptual framework

2.4.1 Pre-triggering

This is one of the important stages, the reaction and response of community members at this stage differ from one community to the other. In some communities, the change attitude comes or is observed as soon as the change button is pressed but the wait and see type of persons will change after they begin to observe others do, then they will follow suit. In summary, the villages that are able to succeed fast are those with leadership that are energetic and passionate. Triggering has been successful in circumstances which seem unsuccessful in the beginning. However , the point of start could be favorable , establish some good stories to refer to , learn on the job and gain some more exposure regarding the job and then use their natural leadership to spread the massage to places that look more difficult (Kar et al., 2008).

2.4.2 Triggering

According to Kar (2008) , majority of triggering done in new villages have not encountered any difficulty . The picture looks good in villages where sanitation improvement attempts have not been tried. A very successful facilitator in CLTS has the chance of doing very good job of triggering in virgin villages. The basic understanding is that every human being will want to change once they are made to understand that they are eating other people's shit. The facilitator's objective will be that the people living in the community will get to see and understand the negative impact of defecating in the open and how that is making their environment bad. Just like the opportunity counseling afford us, the decision to deal with the problem will then be left on to the community members.

2.4.3 Post-triggering

The stage preceding this stage which is the triggering point, members of the community take decision as to put an end to the acts of defecating in the open or to maintain the status quo. This stage is equally most important, the nature or the circumstances of the community can change fast to show a different picture, external positive push factors are however very important. Facilitators cum other stake holders need to be briefed on the happenings about the community, apt and timely responses to situations can effect a great change. Triggering process that comes without follow ups should be avoided because it doesn't help in forward planning (Kar et al., 2008).

2.4.4 Scaling up CLTS

Evidence shows that, about 15 countries have recorded successful introduction of CLTS technology. Some national and international institutions initiated and gave full support to make this noble idea a successful one. These bodies have been active in supporting introduction to new countries and scaling up and spread within countries. Those who have benefited from the training have done step down training in triggering to people within their organizations (Kar et al., 2008).

2.5 Households response to latrine construction and utilization

An evaluation study which assessed the second expanded phase of the CLTS pilot programme in four States – Benue, Enugu, Ekiti and Jigawa – in Nigeria, there was some reduction in skin infections especially among children, reduction in diarrhea and vomiting among children. Approximately 813% increase in latrines constructed (from 116 to 1060

latrines). Availability of 1-2 newly established or rehabilitated water points in every community (Burton (2007).

There was also wide-ranging evidence from the evaluation showing that CLTS was an effective approach to establishing hygiene and sanitation practice in Nigeria, though was largely dependent on certain conditions. CLTS was found to be effective in communities where it was used as the only approach to promoting hygiene and sanitation. However, not effective in communities that had been influenced by the subsidy approach or those which were more urbanized. It was also observed that there were other "triggers" in addition to "shame" and "disgust" that led to change in hygiene and sanitation improvements such as participation. It was seen that the more participatory the process was, the more effective CLTS became. Behavioral changes were very encouraging among the communities where CLTS has been promoted. CLTS has proven to be an effective approach to reducing the high rate of OD in Ghana. CLTS has empowered many extension staff to move from hygiene education to empowering community members to take charge of their sanitation situation through participatory assessment, community action plans and sustenance of behavioral practices (WaterAid, 2007).

Sarpong (2009) , agrees that the Community Water and Sanitation Agency (CWSA), Plan Ghana, UNICEF and WaterAid have been piloting CLTS since 2007 in approximately 308 communities in Northern, Upper West, Eastern, Central and Greater Accra Regions of Ghana with an attempt to scale up hygiene and sanitation improvements. The Evaluation Team (ET) observed that the CLTS pilot projects significantly improved sanitation coverage and practices in the communities within the 18 months of implementation, 69 of

the 308 project communities attained ODF status. Number of households that constructed latrines went from 1857 to 3247 in the project communities, there was 4.21% increase in access to sanitation over two years (Magala & Robert, 2009).

This was 8 times more than the annual percentage increase witnessed from 1990 – 2006 Of the communities visited, hand washing with soap was still very low at (21%). Yet this was one of the key behavioral practices known to reduce the incidence of diarrheal diseases among the children. Six (6) out of 33 (18%) had covers installed on the latrines. The key target for the faecal oral route barriers is the fly which is responsible for transmission of germs; therefore, the importance of covers on the traditional latrines may be underestimated. The CLTS process focused on ODF status in the pilot projects. Sanitation practices mostly involved upgrading or repairing the existing communal latrines, which was the first priority for most communities. Provision was made for construction of separate communal latrines for men and women. Individual household latrine construction was observed at various stages with the majority having the traditional pit latrine using locally available materials. Some communities were supported with slabs for the latrines to move up on the Sanitation Ladder. Improved latrine construction greatly contributed to sustenance of ODF status and will contribute to the achievement of SDGs. Some community members ended OD and adopted the “dig and bury” practice as a means to eliminate contact with faecal matter. Promotion of improved hygiene practices such as well-maintained compounds, construction of refuse pits which were in use and, in a few communities, hand washing with soap was evident in some communities and Hand Washing Facilities (HWFs) were provided and placed next to the latrines. Awareness of the faecal-oral transmission routes was very high (Magala & Robert, 2009).

Nederland (2013) ,was of the view that , as an Operations Manager for Plan International in Sudan, as a response to Plan Sudan invitation, Kar (2008) who initiated and called for CLTS approach visited Sudan in 2009 to train Plan Sudan staff and partners to apply this approach in Sudan for the first time. The workshop was conducted in 'Guli' Program unit, seven villages were then chosen for the pilot that did not have any intervention and also lacked a sanitation system. Difficulties encountered included: previous experiments in neighboring villages rumors that the organization is going to support those who will start the drilling process. Changing climate – heavy rains led to avalanche of latrines holes that had been drilled earlier, and were yet to be roofed. Difficulty in getting roofing materials for the toilets which were expensive. The findings from that project showed that the rate of toilet construction by some communities reached at least 80% and over within 2 months, with one community having all its occupants use toilets. After six months, all the pilot communities were declared ODF.

2.6 Construction and utilization of hand washing devices

The inception of the CLTS concept in the Upper East Region of Ghana, 332 communities have been triggered, with a total number of 8,206 houses. Out of the

332 communities, 212 of them had stopped open defecation. This is because, out of the 8,206 houses, 2,396 of them have latrines. There are also 534 soak away pits and 930 hand washing facilities attached to these latrines (Akapule, 2013).

Again Burton (2007) did a study in 13 communities Benue and Jigawa, the findings was that there were 116 latrines before CLTS was initiated and this has increased to 1060 over a 7- 8-month period (an 810% increase). Most of the latrines have hand washing facilities

outside or nearby and hand washing is reportedly being practiced after defecation and often before eating. Community members associate health improvements to stopping open defecation, using latrines and hand washing. Some of them also reported gaining weight in recent months.

2.7 Residence consciousness of their sanitation situation in Kumbungu District

The level of Knowledge on the health implication of open defecation has been argued to be an important factor in determining a positive response or otherwise of the construction and usage of household latrine. GIZ (2012), that many people, especially the rural poor, do not have knowledge of hygiene practices which include the "construction and use of latrines". According to him he created a major obstruction to household latrine construction and usage; this view informed the approach adopted by the CLTS.

(Alhassan & Anyarayor, 2018) stated in their write up that CLTS approach puts more emphasis on "empowering people to analyze the extent and risk of environmental pollution caused by open defecation. Empowerment, as far as the CLTS approach is concerned, focuses on sensitizing communities on the health implications of open defecation. As Alhassan & Anyarayor (2018) puts it, having the knowledge on the dangers polluted environment comes with as a results of defecating in the open is important to ensuring favorable community response to the construction and use of household latrines. The view that the absence of knowledge plays an instrumental role in the poor response to household latrine construction and usage is further buttressed by Kayise (2003) in his study in Nakasongola where he found out that, the level of knowledge on erecting and using latrines is very low. He argues that, household heads just did not know anything regarding the

health benefit of using a latrine hence the poor response to the need to construct and use household latrines.

However, other studies conducted painted a flip side picture on the "knowledge" concept. They argue that, general knowledge of the linkage between open defecation and diseases such as diarrhea is not the most important barrier to latrine adoption. In the case of infectious water-borne diseases, it is specific information (not general knowledge) on risk exposure that influence people's decisions, particularly in endemic areas (Pattanayak etal. , 2007).

Apart from the above, the CLTS approach also seeks to ensure positive community response to household latrine construction and usage by playing on the emotions of community members through the *"walk of shame"*. The above is in line with the work of Goyena (2019) which has it that , part of the roles of emotions is to serve social functions by enabling us to make commitments we could not otherwise keep. The assertion is further backed by (Ababa, 2009) in a study on "potential motivators behind household toilet adoption" concluded that 40.9% of the respondents interviewed indicated that, feeling shame of contaminating the environment accounted for their decision to adopt a household latrine.

Esteves Mills et al., (2016) is of the opinion that, people and communities do not know the positive relationship between sanitation and health than that of clean water and health. Most likely, this wide spread ignorance can generally be attributed to the use of ineffective hygiene and sanitation promotion strategies by stake holders in the WASH sector including government and Civil Society Organizations (CSOs).

Ababa (2009) also revealed that, convenience (27.4%), security (12.7%) and disease prevention (12.7%) are some of the main motivating factors of households building toilets. Other factors that influence respondents' decision to build household latrines as revealed by Ababa (2009) includes comfort, status, and privacy.

Dickinson & Poulos (2007) in their study on "promoting latrine use" in Bhadrak, Orissa also revealed that, factors such as wealth, cost and technical know-how are some other factors that affect household responses to the need to adopt household latrines. The study revealed that, there is a positive correlation between household latrine adoption rate and household wealth status. Households that are better off in terms of technical knowhow and wealth status tend to construct and use household latrines easily whilst household with poor technical knowhow and economic status tend to cite cost as the reason for poor response to household latrine construction and usage.

The Joint Monitoring Programme (JMP) reports that sanitation coverage in Ghana is approximately of 13%. In other words, only that percentage uses "acceptable or improved" latrines. The National Environmental Sanitation Policy recognizes Community Led Total Sanitation as the approach for sanitation promotion in Ghana. A write up by Ampadu-boakye etal., (2011) indicated that , a number of CLTS pilot projects have, for the last four years, been implemented in Ghana and an evaluation of selected CLTS pilot projects in Ghana concluded that the approach can rapidly change attitudes towards sanitation practices and ignite efforts by communities to improve the sanitation situation in their communities, including increasing demand for latrines.

(WaterAid, 2011) in their work concluded that, hygiene and education are interrelated. This is because education teaches a person the basics of sanitation and hygiene. Similarly, those who are aware of basic hygiene remain healthy and can pursue education better. The community leaders know that following basic hygiene rules can help people come out of the vicious circle of poverty. Healthy people are able to work better. However, if someone is infected by disease, she/he has to spend a fortune on treatment. Basic hygiene, as they perceive it, helps enhance self-esteem. Those who are tidy, clean and healthy are respected in society. They have further said that those who do not have toilets at home feel inferior to those who have toilets at home. Community leaders shared that they feel humiliated when outsiders come to their village and witness the pollution and dirty environment. The study found that the depth of knowledge of sanitation related issues among community leaders was directly related to the level of education they had received.

2.8 The role of residents in the change process to attaining CLTS objectives

In the work of Burton (2007), communities were asked about improvements they have seen since the introduction of CLTS. Almost all reported that they had noticed improvements in health. Most frequently noted was reduction in skin infections particularly amongst children. Community members attributed this to the increased availability of water that came with CLTS and hygienic practices such as more regular showering as a result of their increased awareness. They also listed reduction in Diarrhoea and vomiting also most significant amongst children. These were unsolicited responses which indicated increased awareness amongst people of the relationship between CLTS and health improvements, “Children used to play in the sand where there was open defecation and they would eat the sand”.

2.9 Conclusion

The literature review revealed that, the radical measures and interventions by the Government of Ghana and supported by NGOs to the implementation of CLTS as an innovative tool to ending open defecation was not always effective in communities that had been influenced by the subsidy approach or those which were more urbanized. This impacted negatively on the policies and programmes which affected the effort to achieving open defecation free (ODF).

The literature revealed that, the CLTS as an innovative tool after the piloting and implementation in some countries (Nigeria, Zimbabwe, Kenya and Gambia among others) is effective in promoting latrine construction and scaling up sanitation practices, even though it is important to state that the rate of effectiveness vary from country to country depending of several other indicators.

The pilot project of CLTS in Ghana in 2007 demonstrated significantly an improvement in sanitation coverage and practices in the communities within the 18 months of implementation. Out of 308 project communities, 69 attained ODF status. Though the determinants of the effectiveness or otherwise of an innovation depends on a lot of factors. However, drawing from findings in the literature reviewed, CLTS as an innovative tool to ending open defecation was an effective tool to achieving open defecation free.

This work seeks to assess the CLTS as an innovative tool to ending open defecation in Kumbungu District. This work when finished will bring to light the effectiveness or otherwise of the CLTS as an innovative tool to ending open defecation. The findings of this work will also help policy makers in framing policies as it will serve as a bench mark

for the local Government District and other partners in the implementation of CLTS to push more in the implementation or otherwise. Finally, regardless of the findings of the work it was adds to existing knowledge.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This provide us with the information on the chosen area of study, the research design, sampling design and sample size, data collection strategies and method of data analyses. The chapter also highlights the role of the researcher and some of the ethical considerations in the conduct of this study.

3.2 The Study Areas

The choice of Kumbungu District as a research area was influenced by a write up properly captured by the (DHMT, 2014) which says , limited access to safe drinking water and sanitation facilities and poor hygiene are associated with skin diseases, acute respiratory infections (ARIs) and diarrhea diseases the leading preventable diseases. The source of drinking water is important because potentially fatal diseases, such as diarrhea diseases, guinea worm, typhoid, cholera, schistosomiasis, trachoma, and dysentery, are water-related diseases. Seventeen percent of households in Ghana have no toilet facility and still use the bush or open field for defecation. As expected, rural households are much more likely to have no toilet facilities than urban households, 29 % versus 7 %.

Again, even of greater interest to the researcher is the fact that the chosen District is one of the districts CLTS is been implemented since 2007 and hence will serve as a background for assessing the effectiveness or otherwise of that innovative model.

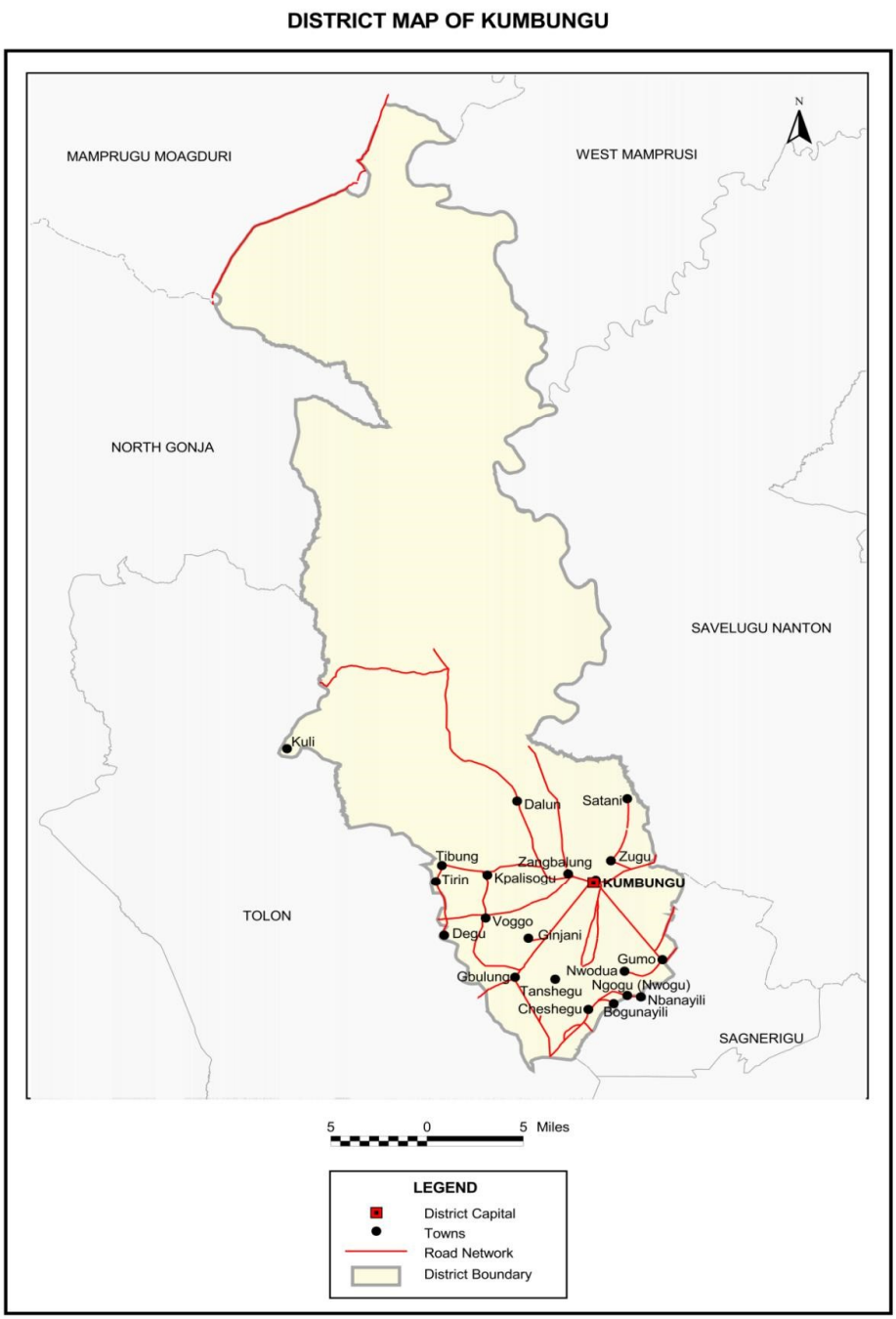


Figure 3.1: District map
Source: (Ghana Statistical Service, 2010)

3.3 Research Design

According to Nyantakyi, (2007), the choice of a research methodology is guided by the research questions and objectives, the focus of the study, the purpose of the study, the extent of existing knowledge, the amount of time and other resources available as well as the researcher's own philosophical underpinning.

This research work is looking into the impact of CLTS which is an innovative model in Kumbungu district - Ghana**.** The research in this sense makes use of both qualitative and quantitative research design. This research piece made use of both primary and secondary data sources.

3.4 Study Population

The District Health Management Team report for Kumbungu in 2016 indicated that, the official population for the year 2016 of Kumbungu district was 46,171 which is mostly rural and covers 144 communities with a population density of 88.7/square kilometer. This population is predominantly young, and people under 15 years of age constitute as high as 49% of residents.

Apart from some few ethnic groups like Dagarbas and Frafras, the study area is largely occupied by Dagombas. The other languages spoken in the community include ; Dagaare, Frafra, Mamprusi, Hausa and English (DHMT - Kumbungu, 2016).

3.5 Sampling Design and Sample Size

The study makes use of a Probability and Non-probability sampling technique. With this, the probability of a person been selected as a member is equal. In this case, Simple Random Sampling Technique was used to select five (5) communities in each town council on

which the questionnaires were administered till the nominal values that were arrived at from the computation were achieved. Non-probability samples on the other hand were based on convenience sampling, judgment, and quota sampling techniques. For the purpose of the study, purposive sampling technique e and convenience sampling technique were employed.

The purposive sampling technique was use because the study is centered on the impact of CLTS as an innovative tool to ending open defecation, not everybody will have expert knowledge on open defecation and this approach helped the researcher to find respondents with deep knowledge in the area of study which guided the focus of the work i.e.; Northern Regional CLTS Coordinator, Kumbungu District Sanitation Officer and Community health volunteers.

According to the Ghana Statistical Service in 2016, total populace for Kumbungu district was 46,171. To this effect, the sample size is determined using the sample frame with an error 5% and with a confidence coefficient of 95% according to (Kish and leslie, 1965).Taro Yamane, 1967 as shown below:

$n = N/1+N(\ell)2$

where;

n = the respondents

N = Sample Frame (46,171)

ℓ^2 = margin of error (5%)

= 396.56439

= 397 ≈ 400

Table 3.1 Distribution of respondents to town councils

Sum of communities in all five (5) town councils = 27＋28＋13＋26＋27=121

Kumbungu	Gumpanarigu	Zangbalung	Vogu	Gbullung	Total
27/121×100 = 22.31%	28/121×100 = 23.14%	13/121×100 = 10.74%	26/121×100 = 21.49%	27/121×100 = 22.31%	= 99.99% ≈ 100%

The figures in the table show the distribution of respondents in percentage terms across the town councils. The sum of the number of communities in all the town councils within the Kumbungu District is 121, so the total number of communities in each town council by the sum of the communities in the district gives the individual values in percentage terms as shown in the distribution above.

Table 3.2 Number of respondents in each community in nominal values

Sample size = 400

Column 1(Names of town council - T.C)	Column 2 (# of respondents in each - T.C)
Kumbungu town council	22.31 / 100 × 400 = 89.25 ≈ 89
Gumpanarigu town council	23.14 / 100 × 400 = 92.56 ≈ 93
Zanbgalung town council	10.74 / 100 × 400 = 42.96 ≈ 43
Vogu town council	21.49 / 100 × 400 = 85.96 ≈ 86
Gbullung town council	22.31 / 100 × 400 = 89.25 ≈ 89
Total	**400**

The table above contain computation of the nominal values of the respondents and its respective names of town council. Random sample was use to pick five communities in each town council on which the questionnaires were administered till the nominal values that are arrived at from the computation in the above table were achieved.

3.6 Sources of Data, Methods of Data Collection and Instruments for Data Collection

The two main data collection sources were employed by the researcher i.e. primary and secondary. The use of secondary data provided a useful understanding to key concepts like household response, and open defecation. Secondary information relevant to the study

(both published and unpublished) were obtained from articles, journals, reports, environmental health policy documents, DHMT report and DPHC report. The researcher employed survey as a technique to collect data in the field. The researcher employed questionnaires, observations and field notes to collect data from respondents.

3.6.1 Questionnaire administration

In the words of Qu & Dumay (2013) , a questionnaire is defined as a research instrument (or other types of prompts) for the purpose of gathering information from respondents. As an instrument in data collection, questionnaire enables a researcher to understand the social world from the perspective of subjects.

The researchers designed the questionnaire around the objectives of the work. Some of the questions in the work were close ended and others were open ended. This flexibility allows for the researcher to ask for more details depending on the situation. Face - to - face questionnaire administering approach was employed. This method was chosen considering the literacy level of the residents.

Some of the respondents could neither read nor write as observed by the researcher during his first visit to survey the study area. Moreover, results obtained from this method were of high quality as it allowed further probing, clarification of items and high response rate.

3.6.2 Observation

Direct observation was used in seeing and recording what was spontaneously happening at the time of collecting data. This is especially necessary because the researcher was concerned in knowing the presence and state of hand-washing devices of households and

the nature of the environment of households since all this contribute to the entire sanitation situation of residents. This approach was also useful to the researcher since information gotten can be used for the purposes of cross checking data obtained through the face - to - face interaction.

3.6.3 Field Notes

This is relevant in taking down additional information which was not expected from field visits and from persons and institutions visited. Field notes taken at each level of data collection provided additional information as well as an insight into some of the responses given by various persons in the course of data collection. This method of soliciting data can also be use as a source of reference to information written down in the course of the research.

3.7 Data Analysis

The statistically package called SPSS was used, MS - Excel computer software was also used to analyze the data obtained. Interpretation and analyses were largely done with the use of tables and graphical representations. Since hypothesis was not included in this study, no related measurement tool such as chi-square and others were used.

3.8 Ethical consideration

The Clearance Committee of the University for Development Studies gave their consent to the research work, both regional and district sanitation departments or unit were also contacted before the start of the data collection.

3.8.1 Informed consent and Confidentiality

Informed consent as averred by (Mogensen, Caswell, & Trick, 1998), is a 'process of negotiation' between the researcher and the study subjects, and not a 'one - off action'. Individual respondents were made to know the intention of the study before the interaction begun. The right of the respondents to pull out at any time in the course of the study was made known to individual respondents. The research respondents were not represented by their name, an indication that confidentiality of the information was taken care off.

3.8.2 Beneficence and risk

The wisdom in assessing the influence of CLTS as a tool to ending OD is that, the researcher thinks that the findings of the work will help address some of the current sanitation problems.

3.9 Conclusion

In conclusion, this chapter provides everything concerning the methods that were employed in the data collection. Processing and analysis of these data is not also left out. The details of the results are in the next chapter.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

Discussion of results of this research work is done in this chapter. The analysis is only done taken into consideration the data gotten from the field to assess the impact of CLTS as an innovation in our attempt to ending OD in the Kumbungu district. The results of the work are done in order of how the objectives of the work are arranged.

4.2 Demographic Information

This research consists of more of quantitative elements, the researcher put into groups the data collected and gave it very suitable headings in the form of tables to show how the information flows. These include; gender, age, level of education and period of stay within the study community. Find below the results of the work in a tabular form.

Table 4.1 Demographic information

Variable	Response	Frequency	Percentage (%)
Gender	Male household head	186	46.5
	Male household member	25	6.2
	Female household head	19	4.8
	Female household member	170	42.5
Age of respondent	18-20	25	6.2
	21-30	103	25.8
	31-40	154	38.5
	41 and above	118	29.5
Educational level	Never been to school	262	65.5
	JHS	91	22.7
	SHS	34	8.5
	Tertiary	13	3.2
Number of years stayed in the community	1-2 years	5	1.2
	3-4 years	34	8.5
	5-6 years	87	21.8
	Above 6 years	274	68.5

Source: Field survey, 2018

Table 4.1 shows that, 186 respondents were male household heads whereas 25 respondents were male household members. Also, 19 and 170 respondents were female household heads and female household members respectively. On age of respondents, it is revealed on the table above that as at the time this study was carried out, 25 respondents were within the age category of 18-20 whilst 103 respondents fell within the age bracket of 21-30. Overwhelmingly, 154 of the respondents fell within the age group of 31-40 whereas 118 respondents representing 29.5 percent were 41 and above years old.

With regards to educational level of respondents, 262 of them representing 65.5 percent have had no formal education whereas 22.7 percentages of them on another hand had formal education up to the Junior High School (SHS) level. Thirty-four (34) and 13 respondents respectively representing 8.5 and 3.2 percents have attained formal education up to the Senior High School (SHS) and Tertiary levels respectively. Considering the period respondent have stayed in the study communities, five respondents indicated they have stayed for the period between 1-2 years whereas 34 respondents have stayed between 3-4 years. Eighty-seven (87) respondents have stayed for the period of 5-6 years whereas an overwhelming 274 respondents have stayed above six years.

4.3 Latrine Availability and Usage

The focus here was to find out the number of households that possess latrines and whether they use them or not. Not only that, information was also sought from respondents whose households do not have latrine on places such household members (adults and children) defecate. The results are presented below on table 4.2.

Table 4.2 Latrine Availability and Usage

Variable	Response	Frequency	Percentage
Latrine in household	Yes	115	28.8
	No	285	71.2
Kind of latrine in household	Flush/pour flush to pit latrine	28	24.3
	Pit latrine with slab	87	75.7
Place adult members defecate	In a latrine	106	26.5
	In the bush or open	9	2.2
Place household children defecate	In the open or bush	47	11.7
	On a garbage pile	32	8.0
	Dig and bury	7	1.8
	In a latrine	23	5.8
	In a chamber pot	6	1.5
Household members uses a latrine	Yes	106	26.2
	No	9	2.2
Household member practice open defecation	Yes	9	2.2
	No	106	26.5
Latrine shared with other households	Yes	39	9.8
	No	76	19.0
Number of households shearing latrines	1-2	24	6.0
	3-4	11	2.8
	5-6	4	1.0
Place members of household without latrines defecate	In an open	195	48.8
	Shared latrine with other household	27	6.8
	Uses a public latrine	63	15.7
Reason for not having latrine in household	Can't afford one	202	50.5
	Now putting up one	43	10.8
	No space	5	1.2
	Don't need one	9	2.2
	Prefer open defecation	17	4.2
	Don't know	9	2.2
Household intends to own a latrine	Yes	215	53.8
	No	27	6.7
Household having capacity to put up latrine	Yes	8	2.0
	No	207	51.7

Source: Field survey, 2018

Of the 400 respondents sampled for this study, 28.8 % indicated they have latrines in the various households whilst 285 representing 71.2 % indicated they were not having latrines in their individual households. Out of the 28.8 % (115) of respondents who possess latrines in their households, 28 respondents stated the kind of latrine in their households were flush/pour flush to pit latrine whereas as the remaining respondents of 87 indicated the latrine kind in their households were pit latrines with slab. Still considering those with latrines in their households, 106 respondents indicated their household adult members defecate in the latrine always, whereas 9 respondents indicated their household adult members defecate either in the bush or in the open most times. On the place children of households with latrines defecate, it is revealed from table 4.2 that 47 respondents' household children defecate either in the open or in the bush whereas 32 of the respondents indicated that their household children defecate on garbage piles. Seven (7) out of the 115 respondents also indicated that children in their households practice dig and bury whilst 23 respondents indicated that their household children defecate in the household latrines. Six (6) respondents also indicated that children of their households defecate in chamber pots.

Responses obtained from the respondents sampled also revealed that out of the 115 respondents whose households possess latrines, 106 indicated their household members are committed to defecating in the latrines whereas 9 respondents stated otherwise. Responses further sought from the respondents aimed at ascertaining whether respondents with household latrines classified places household members defecate as open defecation places, nine respondents stated that their household members are engaged in open defecation whereas 106 respondents indicated otherwise.

Also, the result on table 4.2 revealed that 39 respondents indicated their household latrines were shared with some households without latrines at the time this study was carried out whereas 76 respondents stated there were not shearing household latrines with anyone. Concerning the number of households sharing latrines, of the 39 respondents whose households' latrines are shared, 24 indicated that their household latrines were shared with 1-2 households whilst 11 stated that their latrines were shared with 3-4 households with four respondents also indicating that their latrines were shared with 5-6 households within their community.

Focusing on households without latrines, information on the table 4.2 reveals that 195 respondents' households' members defecate in the open whereas 27 respondents' households' members defecate in other households' latrines with 63 respondents indicating their household members defecate in public latrines. On reasons for not possessing latrines in households, 202 respondents stated they lack resources to own latrines whilst 43 respondents indicated that their households were putting up latrines as at the time the study was carried out. Five respondents indicated there were no spaces to put up latrines for their households whilst nine respondents stated they prefer not having latrines in their households. Also, 17 respondents indicated that they preferred open defecation whilst nine respondents indicated that they did not know the exact reason(s) why their households do not possess latrines.

On intentions to own latrines, 215 respondents indicated their households intend possessing a latrine, whereas 27 respondents indicated their households do not intend owning a latrine. On the capacity level of households with intention to possess latrines, eight respondents

indicated their households have the space resources - wise to put up a latrine whereas 207 respondents stated their households lack the requisite resources to put up a latrine.

4.4 Open Defecation and Household Sanitation Situation

Efforts were made to obtain relevant information on the current sanitation situations within the study communities with regards to the elimination of open defecation while considering their views on the general effects of poor sanitation in relation to health of household members. The results obtained to that effect are presented in table 4.3.

Table 4.3 Information on Open Defecation and Household Sanitation Situation

Variable	Response	Frequency	Percentage
Respondent perception that open defecation is dangerous	Yes	376	94.0
	No	24	6.0
Respondent general view of the household sanitation situation relating to the elimination of OD since the last 2 years	Improved	347	86.8
	Remained the same	41	10.2
	Deteriorated	12	3.0
Respondent general view of community sanitation situation relating to the elimination of OD since the last 2 years	Improved	361	90.8
	Remained the same	29	7.2
	Deteriorated	20	2.5
Existence of a project or initiative targeted at improving sanitation in the community	Yes	359	89.8
	No	41	10.2
Inadequate sanitation affect household relating to health	Yes	183	45.8
	No	217	54.2
How inadequate sanitation affected household health since last year if yes in Q12	Greatly affected	58	14.5
	Slightly affected	125	31.2
Respondent taken measures to reduces exposure to sanitation related diseases risk	Yes	172	43.0
	No	11	2.8
Incidence of sanitation related diseases in household since last year	Increased a lot	14	3.5
	Increased	8	2.0
	Stayed the same	62	15.5
	Decreased	38	9.5
	Decreased a lot	61	15.2
Washing hands properly after defecating by household members since last year	Increased a lot	169	42.2
	Increased	67	16.8
	Stayed the same	92	23.0
	Decreased	43	10.8
	Decreased a lot	29	7.2
Disposing of children stools properly by household members since last year	Increased a lot	207	51.8
	Increased	85	21.2
	Stayed the same	77	19.2
	Decreased	17	4.2
	Decreased a lot	14	3.5
Maintenance of household latrine	Increased a lot	57	14.2
	Increased	17	4.2
	Stayed the same	20	5.0
	Decreased	14	3.5
	Decreased a lot	7	1.8

Source: Field survey, 2018

With the total of 400 respondents sampled for the research work, 376 respondents representing 94 percent indicated they perceived open defecation to be dangerous whereas 24 respondents indicated otherwise. On the view of respondents with regards to household sanitation situation relating to the elimination of open defecation in the community since the last 2 years, a whopping 347 respondents stated their household sanitation situation has improved whereas 41 respondents indicated the sanitation situation in their households remain the same since the last 2 years with 12 respondents also indicating their household sanitation situation has deteriorated in the last 2 years. Also, on the view of respondents regarding community sanitation situation relating to the elimination of open defecation since the last 2 years, 361 respondents indicated their community sanitation situation has improved whilst 29 respondents stated their community sanitation situation has remained the same in the last 2 years with 20 respondents also stating their community sanitation situation has deteriorated in the last 2 years.

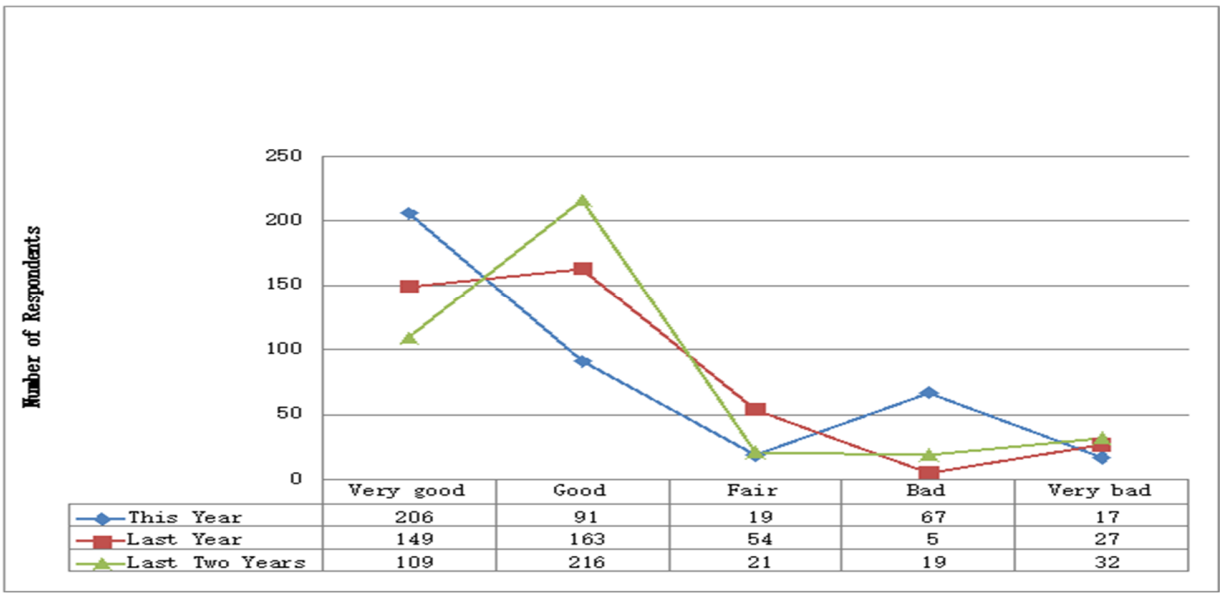
Responses were also sought from respondents on the existence of a project or an initiative targeted at improving sanitation in their communities and on this, 359 respondents indicated there is a project or initiative in that regard whereas 41 respondents responded otherwise. Information on the above revealed that 183 respondents' households were affected health wise by inadequate sanitation whereas 217 respondents' households were not affected health wise. For respondents whose households were affected by inadequate sanitation relating to health, responses were further sought from them whether measures have been taken by them to reduce their households exposure to the risks or not which revealed that 172 affected households have taken some measures to reduce their households exposure to sanitation related diseases, whereas 11 respondents have not taken

any measures at all as at the time this study was carried out. Specific measures taken by respondents to reduce household exposure to sanitation related diseases are presented with Figure 4.1 in the next pages

On status of incidence of sanitation related diseases since last year, 14 respondents indicated sanitation related diseases in the households has increased a lot since the past year whereas eight respondents indicated such diseases have fairly increased in the past year. Also, 62 respondents stated status of sanitation related diseases in their households has remained the same whilst 38 respondents indicated such diseases in their households have fairly decreased with 61 respondents also indicating such diseases in their households have increased a lot.

On the habit of properly washing hands after defecating, 42.2 percent of the respondents indicated their household habit has increased a lot whereas 67 respondents representing 16.8 percent indicated their habit has increased. Also, 23 percent of respondents stated their households' habit has remained the same whilst 10.8 percent stated their habits has decreased with 7.2 percent of the respondents also indicating that their households' habit has decreased a lot. It can also be noted from the above table that 207 respondents representing 51.8 percent stated their households' habit of disposing of children stools properly has increased a lot since last year, whereas 21.2 % indicated their households' habit in relation to properly disposing children stools has increased. 19.2 respondents also indicated their households' habit towards disposing children stools properly has remained the same since last year whilst 4.2 % of the respondents indicated that their households' habit has decreased with 3.5 percent of respondents also indicating their households' habit

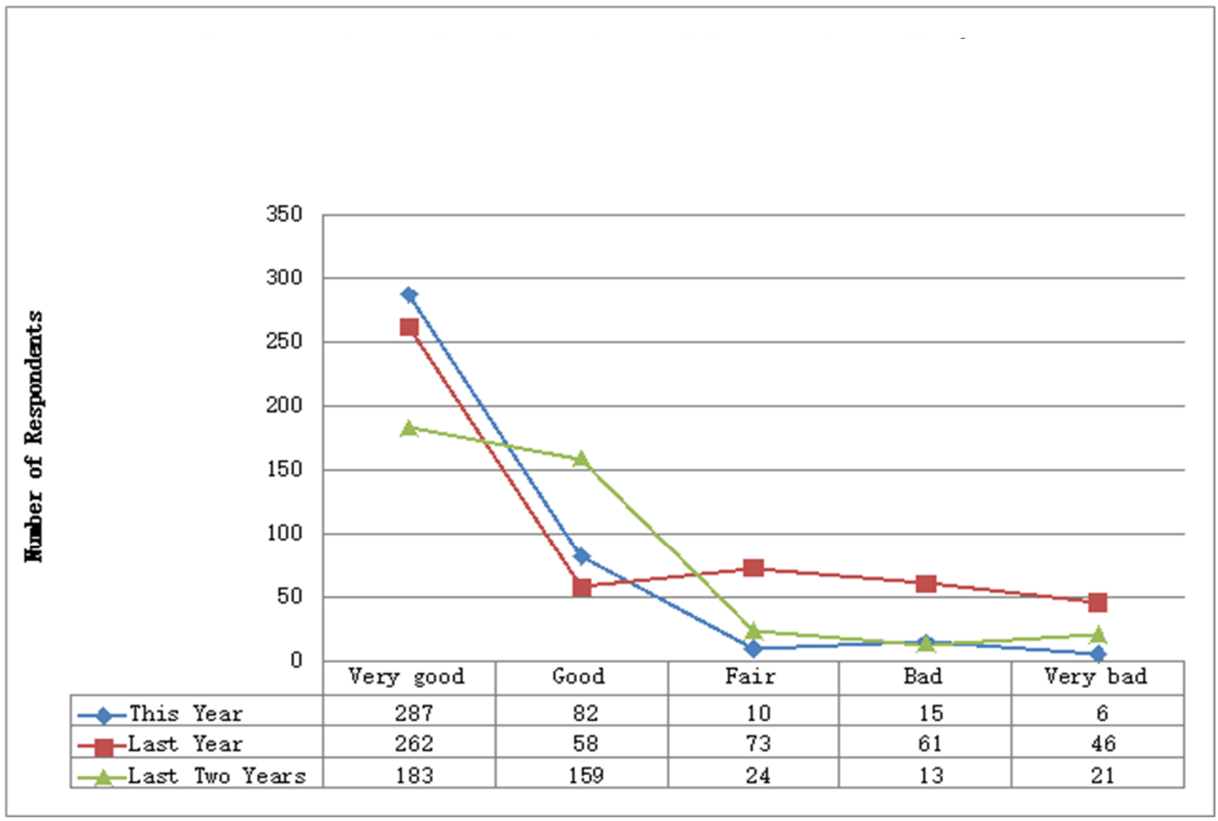
in relation to disposing of children stools properly has decreased a lot. Table 4.3 above also revealed that for those who possess latrines in their households, 57 respondent's indicated that their households' habit towards maintenance of the household latrine has increased a lot whereas 4.2 % indicated their households' habit towards the household latrine maintenance has increased since last year. In addition, five percentage of those who were interviewed indicated their households' habit towards maintenance of household latrine has remained the same whilst 3.5 percent of the respondents stated their households' habit has decreased with seven respondents representing 1.8 % indicating their households' habit has decreased a lot since last year.



KEY : This year = 2018 , Last year = 2017 , Last two years = 2016

Figure 4.1 Household Sanitation Situations Relating to the Elimination of Open Defecation
Source: Field survey, 2018

From Figure 4.1 in the chart above, a total of 206 respondents' households' sanitation situation in 2018 with regard to eliminating open defecation was very good whereas 91 respondents' households' sanitation situations were good. Also, 19 respondents their household situations relating to sanitation was fair whilst 67 respondents indicated their households' situations were bad with 17 respondents indicating their households' situations were very bad. For 2017, information on the chart revealed that 149 respondents were in households with very good sanitation situations whereas 163 respondents were in households with good sanitation situations. In addition, 54 respondents were in households with fair sanitation situations whilst five respondents' households' sanitation situation was bad with 27 respondents also living in households with very bad sanitation situation relating to the elimination of open defecation as at last year. Taking the last two years into consideration, 109 respondents were in households with very good sanitation situations whereas 217 respondents were in households with good sanitation situations. Moreover, 21 respondents were in households with fair sanitation situations whilst 19 respondents were in households with bad sanitation situations with 32 respondents on the other hand also in households with very bad sanitation situations.



KEY: This year = 2018, Last year = 2017, Last two years = 2016

Figure 4.2 Community Sanitation Situations Relating to Elimination of Open Defecation

It is revealed from the figure above that 287 respondents classified their communities' sanitation situations as very good this year whilst 82 respondents classified their communication sanitation situations as good. Also, 10 respondents indicated that the sanitation situations in their communities were fair whereas 15 respondents stated the sanitation situation was bad in their communities with six respondents also indicating sanitation situations in their communities were very bad. In the year 2017; 262, 58, 73, 61 and 46 respondents classified their communities' sanitation situation with regards to the elimination of open defecation as very good, good, fair, bad and very bad respectively.

Considering the year 2016, 183 respondents rated their communities' sanitation situation as very good whereas 159 respondents rated their community sanitation as good. In addition, 24 respondents rated their community sanitation situation as fair whilst 13 respondents rated the community sanitation situation as bad with 21 respondents also on the other hand rating the community sanitation as very bad.

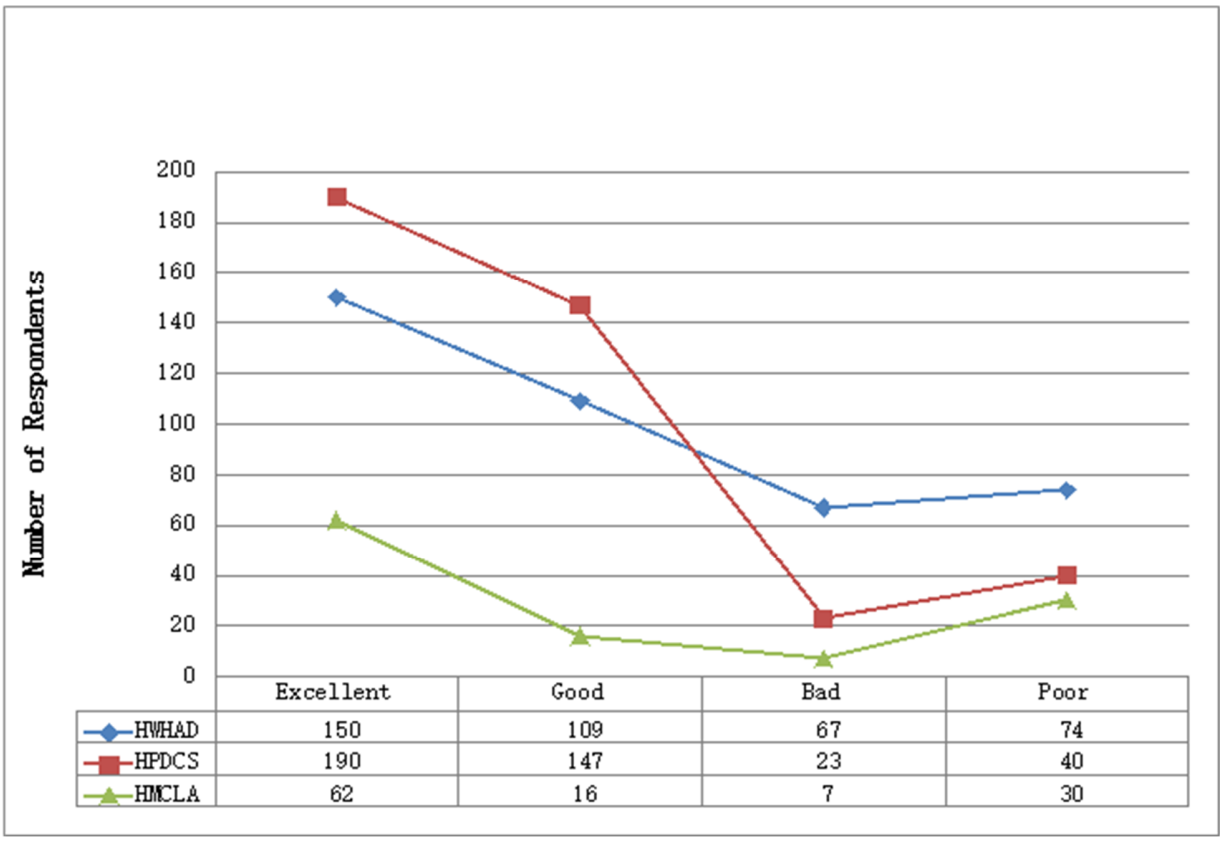


Figure 4.3 Respondent Rating of Household Habit

From Figure 4.3, it can be seen that 150 respondents rated their households' habit of washing hands after defecating (HWHAD) as excellent whilst 109 respondents their households' habit as good with regards to washing hands after defecating. Also, 67 respondents rated their households' habit of washing hands as bad whereas 74 respondents

rated their households' habits as poor. On properly disposing children stools (PDCS), 190 respondents rated their household habit as excellent whereas 147 respondents rated the household habit as good. In addition, 23 respondents rated their households' habits as bad whilst 40 respondents rated household habit as poor. Also, on maintaining a clean latrine always (MCLA), 62 respondents rated their households' habit as excellent where 16 rated their households' habits as good. Seven (7) and 30 respondents rated their household habit as bad and poor respectively.

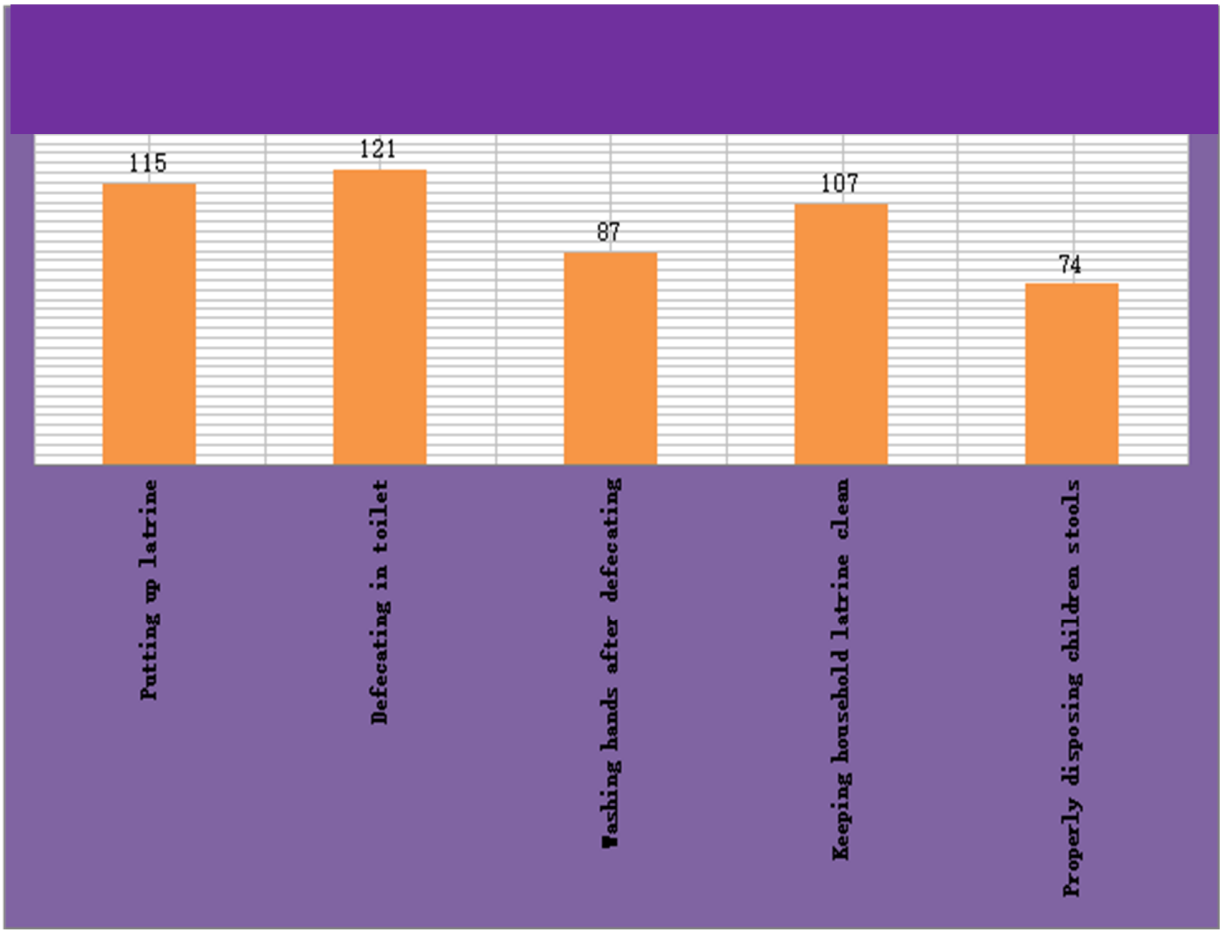


Figure 4.4 Specific Measures Taken to Reduce Household Exposure to Sanitation Related Diseases

The figure 4.4, it is noted that 115 respondents indicated their households put up latrines to reduce their exposure to sanitation related diseases whereas 121 respondents indicated their households have developed the habit of always defecating into a latrine as a way of reducing their household exposure to diseases. Also, 87 respondents indicated their households have adopted the habit of washing hands after defecating so as to reduce their exposure to diseases whereas 107 respondents stated their households always keep their latrines clean to reduce their exposure to sanitation related diseases. Seventy-four finally indicated their households have developed the habit of properly disposing children stools as a way of reducing their households' exposure to diseases caused by poor sanitation.

4.5 Efforts towards Ending Open Defecation

Here, the focus was to reveal the various efforts put up by the study communities towards ending open defecation. The results are presented in Table 4.4.

Table 4.4 Community Efforts towards Ending Open Defecation

Variable	Response	Frequency	Percentage
Source of constructed latrine	NGO	38	9.5
	Philanthropist(s)	8	2.0
	Self	69	17.2
Possession of public toilet facility in community	Yes	8	2.0
	No	392	98.0
Source of constructed public toilet facility if any	Government	6	1.5
	NGO	2	0.5
Existence of sanctions in community for households without latrines	Yes	47	11.8
	No	353	88.2
Forms of sanctions if any	Giving ultimatums	31	7.8
	Excluded from government support	5	1.2
	Be made to pay a certain fine	11	2.8
Existence of sanctions in community for individuals caught defecating in the open	Yes	259	64.8
	No	141	35.2
Forms of sanctions if any	Be made to convey stools	128	32.0
	Be made to pay fine	87	21.8
	Given ultimatums to construct latrines	44	11.0
Existence of measures put up by community towards ending OD	Yes	374	93.5
	No	26	6.5
Specific measures if any	Encourage households to put up latrines	274	68.5
	Encourage households without latrines to dig and burry shit.	157	39.2
	Seeking government support to put up public toilet facility	142	35.5

Source: Field survey, 2018

The above table revealed that, 9.5 % of the respondents got their household latrines from NGOs whereas 2 % got the latrines from philanthropists. 17.2% of the respondents also got their latrines through their own self initiatives. On whether there are public toilet facilities in the study communities, only 2 % of the total of 400 respondents indicated that they have public toilet facilities in the communities. On source of the public toilet facility, 1.5 % of the 2 % of respondents indicated that their public toilet facility was put up by the government whereas 0.5 % indicated their public toilet was from the NGOs.

Responses were also sought on whether there exist some sanctions within the communities for households without latrines and out of the 400 respondents sampled for this study, 47 respondents representing 11.8 % answered in the affirmative whereas a whopping 88.2 % of the respondents indicated there exist no sanctions in their communities against households without latrines. On forms of sanctions existing in the communities for households without latrines, 7.8 % of those who were interviewed indicated that the form of sanction in the community was giving ultimatums to those households to put up latrines, whereas 1.2 % indicated the form of sanction is excluding those households from any form of government support with 11 respondents representing 2.8 % also indicating that the sanction in the communities is making those household heads to pay a certain fine.

Also, on whether there are sanctions in study communities for individuals caught defecating in the open, 259 respondents representing 64.8 % indicated that there exist some sanctions in their communities for people who are found in the act of OD, whereas 141 respondents also representing 35.2 % indicated that there were no sanctions in their communities for people engaged in OD. On specific sanctions existing against individuals

caught defecating in the open, 128 respondents indicated that individuals caught doing OD in their communities are made to convey their stools, whereas 87 respondents indicated that individuals caught in acts of OD in their communities are made to pay a certain fine, with 44 respondents also indicating that individuals caught defecating in the open are given ultimatums to construct latrines in their households.

Information on table 4.4 also revealed that 374 respondents representing 93.5 % were staying in communities where measures were put in place to at ending open defecation whereas 26 respondents were in communities where measures were not put in place towards ending open defecation. On specific measures put up by communities towards ending open defecation, 68.5 % of the respondents indicated that in their communities, encouragement is given to households without latrines to try and put up one, whereas 157 respondents representing 39.2 % indicated that in their communities, encouragement is given to households with latrines to share with other households which do not possess latrines. Also, 35.5 of the respondents indicated that in their communities, appropriate efforts are geared towards seeking government support to construct public toilet facilities to end open defecation.

CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

This is a chapter where the results found in the previous chapter are going to be further put to careful and detailed examination against the recent trends of the situation. In this chapter, attempts are made to offer reasons for certain findings that came out from the data analysis. As part of research, some discussions on the outstanding revelations is done to propose scientific bases for some of the findings.

The topic for resolution is the impact of CLTS as an innovation to ending OD. Kumbungu District with inhabitants ranging from typically peri-urban to typically rural in its nature. This is basis for giving much focus to the level of education, number of years of stay within the study communities and general information on open defecation and individual household sanitation situations.

The District under study (Kumbungu) cannot claim to be isolated in talking about the general sanitation problem in the Northern Region. Literacy rate of the people is a variable in the demographic information which is generally low in the Northern region and this has direct correlation to some negative trends that come from the region.

5.2 Demographic Information

More than half of the respondents (65.5%) have not had the feel of formal education. The remaining respondents had some level of education beginning from Junior High School through the Senior High School to the tertiary stages. Trying to establish the number of years respondents have stayed in the study communities as far as knowledge on the study

topic is concerned, it was revealed that majority of the respondents (68.5%) have stayed in the study communities for more than six (6) years with least of respondents (1.2%) having stayed between one (1) and two (2) years period affirming that respondents were abreast with the issues surrounding the study topic. One could not have expected any more suitable corresponding revelation other than what the computer aided results have indicated which has shown that almost all the respondents fell within the age category of more than 21 years with only few (6.2%) respondents belonging to the age category of 18 to 20. Generally, the study findings revealed that the subjects recruited were adults and would therefore have a clear knowledge of the topic under study and also capable of taking decisions for their households. However, a little over half (211) of the respondents sampled were males with majority (88.1%) of them been household heads. The rest (189) of the respondents were females with 10.1 percent (19/189) of them been household heads, typical of African communities. This means that perhaps most of the respondents (females) within the households might have been denied the chance to contribute to decision making in their households especially relating to the topic under study as men are always the superiors in African homes which is obviously the same for this study area.

5.3 Latrine Availability and Usage

Generally, the study found that a little over a quarter (28.8%) of the respondents within the Kumbungu District had latrines available in households with majority still not owning a latrine. The findings are in line with the findings of the District Sanitation League table in 2017 which revealed that most households in the Kumbungu District do not possess latrines.

The study by Magala and Robert (2009) which is in sharp contradiction has it that , CLTS was piloted since 2007 in approximately 308 communities in Northern, Upper West, Eastern, Central and Greater Accra Regions of Ghana with an attempt to scale up hygiene and sanitation improvements. The Evaluation Team (ET) observed that the CLTS pilot projects significantly improved sanitation coverage and practices in the communities within the 18 months of implementation.69 of the 308 project communities attained ODF status. Number of households that constructed latrines went from 1857 to 3247 in the project communities. There was 4.21% increase in access to sanitation over two years. This was 8 times more than the annual percentage increase witnessed from 1990 – 2006.

Another study which this study is equally contradicting with is the work done by Burton (2007) which revealed the findings on the evaluation of the second expanded phase of the CLTS pilot programme in four States – Benue, Enugu, Ekiti and Jigawa – in Nigeria. The study aimed to assess the efficiency, effectiveness and relevance of the CLTS programme, and to recommend ways of improving and scaling up the programme in Nigeria. Relevant findings on outcomes measured include: Reduction in the extent of open defecation, with some communities declaring “open defecation free” status, reduction in skin infections especially among children and reduction in diarrhea and vomiting among children. Approximately 813% increase in latrines constructed (from 116 to 1060 latrines). Availability of 1-2 newly established or rehabilitated water points in every community. There was also wide-ranging evidence from the evaluation showing that CLTS was an effective approach to establishing hygiene and sanitation practice in Nigeria, though was largely dependent on certain conditions. CLTS was found to be effective in communities where it was used as the only approach to promoting hygiene and sanitation. However, not

effective in communities that had been influenced by the subsidy approach or those which were more urbanized.

This study also revealed that kind of latrine possessed by majority of the households were pit latrines with slab, typical of a rural area with only a few households (7.0%) having flush/pour flush type of latrines. These findings go to confirm the findings of World Health Organization in 2015, who reported that about 2.3 million globally do not have access to basic sanitation facilities such as latrines.

While it was generally observed and verified that only few households had latrines available at their homes, it was also noticed from the study that even in households that had latrines, some adult members still resort to the use of bush for defecation with more household children defecating in the open, always on garbage piles and in chamber pots, hence requiring further probing on the manner these children' stools are handled by household members. Out of those who owned latrines, 33.9 % of them do share it with households without latrines and as many as 66.1 % of them uses it alone. Though not available, coupled with lack of capacity to put up latrines at the time of the study, it was revealed that as many as 75.4 % of the households without latrines intend to own one in the near future.

5.4 Information on Open defecation and household sanitation situations

The study would not be considered complete if views of respondents on open defecation was not obtained, because the main issue at the center of this study was open defecation and it was in the right direction to seek responses on the perception of respondents regarding open defecation, that is, whether in their view, it is considered dangerous or not.

This particular variable was relevant as it has the tendency of revealing what can be considered the major reason for possessing a latrine or defecating in a latrine or otherwise. Though, smaller fraction of the respondents sampled indicated that their households possess latrines, a whopping 94.0 % of the respondents view open defecation as dangerous. This means that sooner or later, respondents who are part of this overwhelming figure of 376 indicating open defecation is dangerous are likely to take concrete steps to possess latrines within their various households. Also, this brings the economic conditions of the people to bear as 50.5 % of the respondents without latrines previously stated their reason for not possessing latrines in their households is the lack of resources.

The findings correspond with (Alhassan & Anyarayor, 2018) declaration that, knowledge on the extent and risk of environmental pollution caused by open defecation is key to ensuring favorable community response to the construction and use of household latrines and that lack of knowledge is a major factor for the poor response to household latrine construction and usage of household latrines. The work done by (Pattanayak et al., 2007) also supports this study up where respondents stated their inability to putting up household latrines to lack of resources. Again, factors such as wealth, cost and technical know-how are some other factors that affect household responses to the need to adopt household latrines.

The study revealed that, there is a positive correlation between household latrine adoption rate and household wealth status. Households that are better off in terms of technical knowhow and wealth status tend to construct and use household latrines easily whilst

household with poor technical knowhow and economic status tend to cite cost as the reason for poor response to household latrine construction and usage.

Also, considering the general view of household sanitation situation in relation to the elimination of open defecation, it can be noted that even though there is still lack of latrines in more households, general household sanitation has been improving over time since the last two (2) years as 86.8 % testified to that effect. Also, on the community level, it has also been noted that general sanitation situation has improved this year as compared to the situations in the last two (2) years. This result can be traced to the issue of respondents viewing open defecation as dangerous and the sanitation initiatives targeted at the study area as the findings appear to reveal.

On health issues of households relating to inadequate sanitation, it is revealed that an appreciable number of the respondents have ever battled with sanitation related diseases affecting their households with some respondents admitting their households have been greatly affected health wise due to inadequate sanitation. It is also established that most respondents whose households had been affected health wise due to inadequate sanitation have taken appropriate measures to reduce their household exposure to sanitation related diseases. Such measures taken as observed on figure 4.4, are putting up latrines, always defecating in a toilet, washings hands after defecating, keeping household latrines clean always and properly disposing household children stools.

It is worth noting that incidence of sanitation related diseases in households has either remained the same or on the decline since last year and even though few respondents indicated their cases have increased, the influence of that on the findings of this study has

rather been low. Also in general, household habit of washing hands properly after defecating has increased since last year, whereas the habit disposing children stools properly since last year has also been on the increase. In addition, maintenance of household latrines is also on the increase as compared to household habit towards maintenance last year.

5.5 Efforts toward Ending Open Defecation

The fight against open defecation is not left to only a few who matters in society; governments, developmental partners, non-governmental organizations, civil society organizations, community-based organizations, philanthropists. The very people in the affected areas have been putting up proper measures to tackle the issue which is considered as one of the main causes of death among children in the 21st century.

Findings from this study revealed some efforts made by the Ghanaian government, NGOs, Philanthropists and study community members considering the source of household latrines and public toilet facilities within the study communities. The communities themselves have also laid down some measures aimed at ending the open defecation.

Though very few respondents indicated there are sanctions in their communities for households without latrines, it can be considered a step in the right direction and it is highly anticipated that more communities within this study zone will adopt the idea when they begin to see positive outcomes as a result. Such sanctions as established from the study are, giving ultimatums to those households without latrines to put up one, excluding the affected households from any form of government support and imposing of fines to be paid by the affected households. It is also revealed that there are sanctions in some of the study

communities for individuals who are caught defecating in the open and such sanctions according to the respondents are; making the individuals to collect his/her stools, imposing fine on such individual to pay and giving ultimatums for such individual to ensure a latrine is put up in his/her household.

It is also heartwarming to note that there have been some general measures put up by the communities towards ending open defecation and such measures are; encouraging households without latrines to construct latrines, encouraging households with latrines to share with others who do not have, while taking up maintenance and cleaning of those latrines serious, and seeking government support to put up public toilet facilities.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study.

6.2 Demographic data

The composition of this sampled population was slightly skewed towards the male stratum. The distribution had a bi-modal peak with 21-30 and 31-40 age categories also depicting some revelation which sounds obvious the active class. It is worth noting that the 'never been to school' has the modal class and highest educational class carrying the least. This is a clear situation of ignorance bearing the brunt. Above 6 years of stay within the study communities by respondents also had the modal class which was pretty obvious. This means, participants recruited for the study were abreast with the various issues surrounding the topic under study.

6.3 Latrine Availability and Usage

The next factor has to do with the actual availability of the latrines and their usage. The data gathered and analyzed on the issue seem to paint a gloomy picture of the menace at hand. There appears to be an overwhelming number of households who have no latrines. Whereas one would have thought this factor can only be a problem of the adults, evidence abounds that the situation among children rages on. The haphazard and sometimes highly unsafe way that adults within such communities or areas dispose their stools and that of their children may have a corresponding influence on the status of household health. In

such a community or area; open defecation, throwing both adult and child stools into open spaces and open refuse damps are almost the order of the day.

Apart from reasons of economic inability which have been established to be the reason for households not possessing latrines, the issue of absence of latrines in the homes could also be seen as an attitudinal phenomenon. The absence of latrines does not seem to prick household heads. In few cases even those households which can afford are carried along by the majority who do not see any slur it casts on their images. Whatever reason(s) that may account for the absence of latrines in the households must be a key remedial issue to be tackled in order to reduce the issue of open defecation.

Before leaving this issue of non-availability in the households, it would be worth bringing the use of the latrine into focus. The presence of latrine is one issue but the way such a latrine in the household is used is another. To think of the presence of incidence of sanitation related diseases in areas within the study zone even among households which have indicated that they have latrines in their homes point out one other serious factor. Suggestions could be that the community is not fully equipped with the very healthy and hygienic ways of using a latrine. A desire to discover more saw the research looking into the use of the latrines. Many households indicated that they do share the use of such a facility in their household with other households. Such a situation may present an even bigger danger of sanitation related diseases if such household do not maintain the latrines properly. Though the research ascribed big injurious factors for households without latrines, equal proportion of the reasons of sanitation related diseases can be given for the poor use of the few latrines that are available.

6.4 Open Defecation and Efforts towards ending it

Generally, this study has established that respondents are aware to some level of the dangers of open defecation which perhaps has been the motivational factor pushing for the improved sanitation situations at the households and community levels as discovered by this study. In perspective, incidence of sanitation related diseases was on the decline courtesy of the measures taken by respondents translating into the habit of always defecating in a latrine (i.e adults), properly washing hands after defecating, disposing children stools properly and maintaining clean latrines always. These measures among others taken up by respondents have generally improved the sanitation situation in the households and the study communities positively.

Community leaders and household heads have also been up and doing in their fight towards ending open defecation. Numerous measures that have been taken by the communities in that regard are giving ultimatums to household heads to construct latrines, excluding affected households from government support and imposing certain fines on affected households. Individuals caught defecating in the open are made to collect their stools, pay certain fines and given ultimatums to construct latrines within their households as forms of sanctions.

6.5 Conclusions

As observed by the researcher, the study area is characterized by general economic handicaps which translate into their poor domestic sanitation including lack of latrines with its attendant effects on household health. There is however a great willingness of the area to have latrines in their households.

The foregone conclusion clarifies the next which has to do with the availability and use of latrines in the households. Latrines are simply lacking and the few which are there are either poorly taken care of or over shared with several households with its attendant possibility of increasing sanitation related diseases if proper maintenance of such latrines is not taken seriously.

Research has also established that evidence of knowledge of safe ways of disposal is there but such knowledge is too scanty and leads to poor adherence to precautions by adults to safe regulations and expert advice to safe child-stool handling. And greatly related to these conclusions is one that has to do with the present household and community sanitation situation. Conclusion here is that the sanitation situation in the households and communities has improved positively since the last two (2) years translating into the reduction of incidence of sanitation related diseases. Also, numerous efforts have also been employed by the communities and household heads to improve sanitation with regards to the ending of open defecation.

6.7 Recommendations

Based on the above findings, the following recommendations are made;

1. The District Assembly should work hand in hand with the District Environmental Health Office to come out with sanitation models which will have household head supporting the construction of latrines in their homes without necessarily giving out physical cash i.e.; digging the pits or doing some labor work in the construction process so that they are able to own the projects. This is paramount since poverty came out strongly as one of the main causes of their lack of household latrines.

2. Again, the district assembly which represents the central government should come out with investment models with the package that can allow household heads presenting farm products which will be valued and then be used to construct latrines for them since the study area is a farming dominated community.

3. With the current wave of environmental awareness, many NGO's are in the system helping communities to construct very affordable in-house latrines. Such NGOs should be wooed to the area to help in bridging the latrine deficit ie, SNV etc. The community heads through their development agents should collaborate with Kumbungu District Assembly and other stake holders in the sanitation sector to institute some bye-laws and making the construction of latrines in the new houses springing up in the study area compulsory and enforcing same.

4. Again, the district assembly can equally include in the bye-laws some time lines for the existing households to construct latrine in them and indicating fines that will be meted out to household heads who will default at the end of the day.

5. All public institutions within the study area must make the construction of places of convenience (toilet) their responsibility before they commence operation.

6. The environmental and sanitation officers in the study area should up their work to ensure that every house will at least dig and always bury their refuge to make the environment clean.

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APPENDIX: INTERVIEW GUIDE

Seeking Respondent's Consent

My name is **Iddrisu Kamaldeen Fuseini**, a post graduate student of the University for Development Studies, Tamale Campus pursuing Community Health and Development (MSc) option. I am conducting an academic study on the topic "Assessing the Implementation of Community Led Total Sanitation (CLTS) as an innovation to ending Open Defecation (OD) in the Kumbungu District area of Ghana''**.** All ethical guidelines covering research work will strictly be observed in conducting work.

NOTE: Tick where necessary (√)

S/N	**SECTION A: PERSONAL INFORMATION**		Code
Q1	Respondent' gender	1. Male 2. Female	
Q2	Age of respondent	1. 18-20 2. 21-30 3. 31-40 4. 41 and above	
Q3	Educational level of respondent	1. Never been to school 2. Junior High School 3. Senior High School 4. Tertiary	
Q4	How long have you been staying in this community?	1. 1-2 years 2. 3-4 years 3. 5-6 years 4. Above 6 years	
	SECTION B: LATRINE AVAILABITY AND USAGE		
Q5	Do you have a latrine in your household? (**Skip to Q13 if your answer here is No**)	1. Yes 2. No	
Q6	What kind of latrine do you have in your household?	1. Flush/pour flush to piped sewer system 2. Flush/pour flush to pit latrine 3. Flush/pour flush to septic tank 4. Pit latrine with slab 5. Pit latrine without slab or open pit	
Q7	Which place do adult members of your household defecate?	1. In a latrine 2. In the bush or open 3. Dig and bury 4. Decline to state	
Q8	Which place do children of your household defecate?	1. In the open 2. On a garbage pile	

		3. Dig and bury 4. In a latrine 5. In a chamber pot	
Q9	Do your household members use the latrine?	1. Yes 2. No	
Q10	Do any of household members practice open defecation?	1. Yes 2. No	
Q11	Does your household share the latrine with other households?	1. Yes 2. No	
Q12	If yes, how many households do you share your latrine with? (**Skip to Q17 after this question**)	1. 1-2 2. 3-4 3. 5-6	
Q13	Where do members of your household defecate?	1. In an open 2. In other household latrine 3. In a public latrine	
Q14	What do you think account for your household inability to possess a latrine presently?	1. Can't afford one 2. Now putting up one 3. No space 4. Don't need one 5. Prefer open defecation 6. Don't know	
Q15	Does your household intend to own a latrine?	1. Yes 2. No	
Q16	Do you think your household has the capacity (resources, skills etc) to put up a latrine?	1. Yes 2. No	
	SECTION C: OPEN DEFECATION AND HOUSEHOLD/COMMUNITY LEVEL SANITATION SITUATIONS		
Q17	Do you think open defecation is dangerous?	1. Yes 2. No	
Q18	Generally, what do you think of your household sanitation situation relating to the elimination of open defecation since the last 2 years?	1. Improved 2. Remained the same 3. Deteriorated	
Q19	Generally, what do you think of this community sanitation situation relating to the elimination of open defecation since the last 2 years?	1. Improved 2. Remained the same 3. Deteriorated	
Q20a	How can you rate your rate your household sanitation situation relating to the elimination of open defecation this year?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	
Q20b	How can you rate your rate your household sanitation situation	1. Very good 2. Good	

	relating to the elimination of open defecation as at last year?	3. Fair 4. Bad 5. Very bad	
Q20c	How can you rate your rate your household sanitation situation relating to the elimination of open defecation in the last 2 years?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	
Q21a	How can you rate your rate this community sanitation situation relating to the elimination of open defecation this year?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	
Q21b	How can you rate your rate this community sanitation situation relating to the elimination of open defecation as at last year?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	
Q21c	How can you rate your rate this community sanitation situation relating to the elimination of open defecation in the last 2 years?	1. Very good 2. Good 3. Fair 4. Bad 5. Very bad	
Q22a	How can rate your household habit of washing hands after defecating?	1. excellent 2. Good 3. bad 4. Poor	
Q22b	How can rate your household habit of properly disposing children stools?	1. excellent 2. Good 3. bad 4. Poor	
Q22c	How can you rate your household habit of maintaining a clean latrine always (**Skip this question if your answer to Q5 was No**)	1.. excellent 2. Good 3. bad 4. Poor	
Q23	Is there a project or initiative targeted at improving sanitation in this community?	1. Yes 2. No	
Q24	Has inadequate sanitation affected your household in relation to health?	1. Yes 2. No	
Q25	To what extent has inadequate sanitation affected your household in relation to health?	1. Greatly affected 2. Slightly affected	

Q26	Have your household taken measures to reduce its exposure to sanitation related diseases?	1. Yes 2. No	
Q27	Specifically, what measures has your household taken to reduce its exposure to the sanitation related diseases? (**Multiple response**)	1. Putting up a latrine 2. Defecating in toilet 3. Washing hands after defecating 4. Keeping household latrine clean always 5. Properly disposing children stools 6. Other, specify …….	
Q28a	How has been the incidence of sanitation related diseases in your household since last year?	1. Increased a lot 2. Increased 3. Stayed the same 4. Decreased 5. Decreased a lot	
Q28b	How has been your household habit of washing hands properly after defecating since last year?	1. Increased a lot 2. Increased 3. Stayed the same 4. Decreased 5. Decreased a lot	
Q28c	How has been your household habit of disposing children stools properly since last year?	1. Increased a lot 2. Increased 3. Stayed the same 4. Decreased 5. Decreased a lot	
Q28d	How has been your household habit of maintaining a clean latrine always since last year? (**Skip this question if your answer to Q5 was No**)	1. Increased a lot 2. Increased 3. Stayed the same 4. Decreased 5. Decreased a lot	
	SECTION D: EFFORTS TOWARDS ENDING OPEN DEFECATION		
Q29	What was the source of your household latrine? (**Skip this question if your answer to Q5 was No**)	1. NGO 2. Philanthropist(s) 3. Government 4. Self	
Q30	Do you have a public toilet facility in this community (Skip q18 if your answer here is no)	1. Yes 2. No	
Q31	What was the source of the toilet facility?	1. NGO 2. Philanthropist(s) 3. Government 4. Self	
Q32a	Do you have sanctions in this community for households without latrines?	1. Yes 2. No	
Q32b	What are the sanctions if any?	……	

		…… ……	
Q33a	Are there sanctions in this community for individuals caught defecating in the open?	1. Yes 2. No	
Q33b	What are the sanctions if any?	…….. …….. ……..	
Q34a	Are there measures put up by this community towards ending open defecation?	1. Yes 2. No 3. Do not know	
Q34b	What are the specific measures if any?	…… …… ……	

Appendix II: picture Gallery of activities undertaking at study site