KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF RELIGIOUS STUDIES

THEOLOGICAL RESPONSE TO OPEN DEFECATION IN ASOKORE MAMPONG MUNICIPALITY.

BY

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUUDIES, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY-KUMASI, IN PARTIAL FUFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF

MPHIL IN RELIGIOUS STUDIES.

FEBRUARY, 2023

DECLARATION

I hereby declare that this submission is my own work towards the award of the MPhil and that, to the best of my knowledge, it contains no material previously published by another person nor material which had been accepted for the award of any other degree of the university, except where due acknowledgement had been made in the text.

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DEDICATION

I am dedicating this thesis to my lovely family, especially to my wife, kids and my lovely parent.

ACKNOWLEDGEMENTS

It is with great pleasure that I wish to acknowledge the invaluable support and assistance of the following without whose help this study report would not have been possible.

I am indeed indebted to my able supervisor, Rev. Fr. Dr. Addai – Mensah without whose guidance and patience and support respectfully I could not have come this far. I am also grateful to all the lecturers and students of the Institute, Kwame Nkrumah University of Science and Technology, who in diverse ways have helped me in my study. I greatly appreciate the immense support given to me by the Honourable Municipal Chief Executive, and the environmental health and sanitation officers of the Asokore Mampong Municipal Municipality.

My immerse gratitude also goes to the Assembly members of various communities, recognized religious and traditional leaders who are considered in this project and finally, I specially acknowledge the patience and support of my family members.

ABSTRACT

Inadequate environmental sanitation and open defecation has been recognized as a public health hazard worldwide. In some Ghanaian communities, living with waste and defecating in gutters as part of the natural environment has become a way of life. This study is to identify the theological response on sanitary condition of urban communities in Asokore Mampong Municipality. The study uses a cross sectional survey design for a sample population of 6,770 household head of four communities in the municipal. Simple random sampling technique as well as purposive sampling was used in selecting 350 inhabitant/household head in these communities and structured questionnaire was used for data collection, both primary and secondary data were also considered in the study. Data was analysed using frequencies, percentages and Cronbach Alpha. Result of the findings shows that, both communities were beset with extremely poor waste management practices. Large volumes of waste were observed in almost every open space with the few poorly maintained gutters being clogged by waste. Improved toilet facilities coverage was extremely low (2.8% for Aboabo number 1, 4.8% for Aboabo number 2, 1.4% for Aboabo Extention and 8.9% for Asawase) leading to an average number 227 representing 64.9% of households patronizing the few public toilet facilities in the communities. Majority of the private toilets were also shared by more than three households. High levels of indiscriminate disposal of children's excreta on open plots, streets, gutters and dump sites were observed as well as the practice of open defecation. Due to this, high levels of water related diseases, particularly diarrhoea (12.7%, 16.2%, 24.4% and 11.6 respectively) were high in children under five years in both communities. The study also reveals the various unsatisfactory personal, domestic and environmental hygiene practices, contributing to various diseases in the communities. These findings could be used by residents and city authorities for planning and effective management of the sanitation sector in order to protect public health and ensure good environmental quality. Therefore, to enhance the sanitary condition and open defecation in these communities, the government should establish and enforce a more robust environmental sanitation approach and health education.

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INTRODUCTION

1.1 Background to the study

This thesis is about sanitation, the defecatory practices of a community and local means of managing human excreta. Although everyone excretes germs in their feaces, not all feaces are harmful. One gram of excreta, may contain ten million viruses, one million bacteria, 1,000 parasite cysts, and one hundred parasite eggs. If about 100 viruses or 10,000 bacteria are transmitted to someone through food or water can makes that person sick. As a consequence, it is important to avoid human interaction with feaces.

However, Human interaction with faeces occur due to lack of a latrine and/or inappropriate use of sanitation facilities. Excreta management has becomes a concern of interest to sociologists and anthropologists, as well as a public health and engineering concern.

The safe removal of human excrement has been and continues to be an important test of preventive well-being. To be honest, this challenge includes suggestions for preparing, planning and executing sterilization arrangements[1] .The purpose of having and using a toilet is to keep human waste away from humans. According to WHO and UNICEF data, poor sanitation, hygiene, and water lead to 88 percent of diarrheal infections and the deaths of 1.5 million children under the age of five. Furthermore, diarrhoea kills more young children globally than malaria and tuberculosis

[1] Shordt, K., & Cairncross, S .*Sustainability of hygiene behaviour and the effectiveness of change interventions*: Findings of a multi-country research study and implications for water and sanitation (Netherlands: 2014), 66-98.

together[2].Diarrhoea also affects the health and nutritional status of children and keeps them out of school[3].

According to WHO and UNICEF report (2014), the number of people engaged in open defecation has decreased by 21% in recent years since the 1990s, from 1.3 billion in 1990 to 1 billion in 2012, constituting 14% of the global population who are without any form of sanitation facility and continue to defecate in unapproved places.
According to the report, 9 out of 10 people practicing open defecation live in rural areas, although it is steadily increasing in metropolitan areas. Southern Asia and sub-Saharan Africa countries, including Ghana, continue to have the lowest levels of coverage of sanitation and is a concern in international development circles. Out of the total number, 25% are located in sub-Saharan Africa, with the majority (949 million) living in the rural and peri-urban areas.[4]

Another attempt at global disinfection, November 19th was declared World Toilet Day by the UN General Assembly in 2001. It was a day to bring to light the problems of all people who do not go to a latrine, regardless of their reason, freedom to water and sterilization.[5] Previously, at this time, the WHO also celebrated the 7th of April each year as World Health Day to raise awareness each year of an issue critical to global well-being. The concern includes infections related to sterilization and climate. This shows that both disinfection and well-being are of worldwide interest.

[2] WHO/UNICEF. Diarrhoea: *Why children are still dying and what can be done*, (2009).
[3] Black, M., & Fawcett, B. *The last taboo: Opening the door on the global sanitation crisis*. (London: 2008). 42-56
[4] WHO & UNICEF. *Progress on drinking water and sanitation*. Joint Monitoring Programme for Water Supply and Sanitation. (Geneva: 2013).
[5] United Nations, *Office of the High Commissioner for Human Rights (OHCHR), United Nations Human Settlements Programme (UN-HABITAT), World Health Organization* (WHO). The Right to Water Fact, (2010). 35

1.1.1 The contemporary hygienic condition

Currently only 14% of the total dwellers in Ghana has advanced disinfection, a fact that is not so unique in a global comparison. WHO and UNICEF (2014) estimate that 59 percent of the world's population uses shared latrines.[6] and 19% still practice open defecation (O.D). The Joint monitoring program (JMP), which reviews the MDG on water and sterilization, found that Ghana has the greatest number of people in the world (59%) using shared or public latrines: this is unchanged disinfection according to JMP guidelines. Likewise, 8% use unmodified latrines such as container toilets and traditional pit toilets, while about 19% of individuals practice O.D. While in the metropolitan areas O.D abridged from 11% to 7%, in the provincial networks it increased somewhat from 29% to 33%.

Table 1.1: Hygienic condition in Ghana (2010 – 2020)

			Urban (%)				Rural (%)				National (%)			
Year	**Population**	**% urban population**	**Improved**	**Shared**	**Other unimproved**	**Open defecation**	**Improved**	**Shared**	**Other Unimproved**	**Open defecation**	**Improved**	**Shared**	**Other Unimproved**	**Open defecation**
2010	24,392	51	19	73	2	6	8	43	16	33	14	58	9	19
2015	27,849	54	20	73	3	8	11	54	6	30	24	59	4	22
2020	31,073	57	38	75	6	6	15	60	5	25	33	71	15	28

Source: WHO & UNICEF JMP Report (2020)

The issue of sanitation has been, and still is, one of the major challenges of both past and present governments. Although most political parties include issues on sanitation

[6] WHO & UNICEF. "*Progress on Drinking Water and Sanitation*", JMP's (2014).

in their manifestos, none of them has been able to fulfil their promise when they win power. For example, For instance, in 2004 the National Democratic Congress (NDC) promised to supply materials (including local materials) for latrine construction; extend subsidies on latrine construction; enforce laws on sanitation by the District Assemblies and Committees; increase public education on hand-washing and good sanitation practices; and provide handwashing facilities at public institutions, especially schools

They also ensured acceptance of a community-led Total Sanitation (CLTS) system to promote hygiene. Implementation of "sterility for all Ghana compacts"; and properly supervised by the new National Health Department as an exceptional body under local government services with autonomous subsidy, during the first 100 days of its term,[7] the NDC was associated with the shocking devastation of the country caused by improper waste management frameworks and practices. The party also promised to take prominent and widespread actions to deal with our health. The National Patriotic Party (NPP) also pledged to work towards improvement of environmental sanitation through education and enforcement of bye-laws of the Assemblies. Greater attention was to be given to environmental sanitation and hygiene in the basic school curriculum.[8]

[7] NDC Manifesto for a better Ghana overview *Better Ghana investing in people*, (Accra: 2008).
[8] NPP *Manifesto Elections - Ghana NPP Manifesto Act, W*, (Accra: 2008).

1.2 Statement of the Problem

The issue of sanitation and open defecation has been and still is, one of the greatest problems facing governments in Ghana as being one of the causes of environmental pollution. Environmental impacts of the accumulation of human excreta have adverse effects on the bacteriological quality of drinking water. Open defecation can introduce toxins and bacteria into the ecosystem, which may harm aquatic life. It enables transmission of infectious diseases through the faecal–oral route and could hinder achieving the targets set for sustainable development. (Sulaiman, A. H. 2019).[9]

ON HEALTH: Human faeces are the primary source of pathogens that cause diarrheal diseases such as cholera, typhoid and amoebic dysentery. Hepatitis A is highly correlated with open defecation, while Hepatitis E also spreads through drinking water contaminated by human faeces. Soil-transmitted helminths are another health risk associated with open defecation. The harmful societal effects of open defecation include infectious diseases at the community level, malnutrition and stunting in children, and exposure of women and girls to the risk of infections. ON SDG: Open defecation has the potential to affect the targets related to SDGs 6,3,4, and 5, which deal with clean water and sanitation, health and wellbeing, quality education, and gender equality, respectively. As a result, the importance of religious values in relation to sanitation cannot be overstated due to their impact on people's choices. Muslim rites of anal cleansing, as well as strict religious prohibitions on contact with urine and feces, were factors that influenced their inability to follow urinary-separating latrines, According to research by Nawab, on cultural preferences in developing ecological sanitation in Pakistan's northwest -Frontier Province. The majority of people favoured

[9] White, G., Bradley, D., & White, A. *Drawers of water: Domestic water use in East Africa*, (Chicago University Press: 1972).

flush toilets and considered all other types of toilets to be outdated, backward, and taboo. The toilet served its function for most people by removing faeces from their immediate surroundings. You should also wash after defecation as the toilet is a wet machine.[10]

In a study by Cotton[11] residents refused to use them because the location of a latrine in the northeast corner of the property was inconsistent with their beliefs. People decide their defecation preferences and rituals by looking at life from their own cultural and religious perspective[12]. Personal "comfort" has been shown to influence people's toilet preferences and behavior, in addition to cultural and religious beliefs.

1.3 Objectives of the study

The general objective of the project is to identify the impact of theological response to sanitation in Asokore Mampomg Municipality.

The study seeks to achieve the following specific objectives:

1. To examine the influence of socio-demographic dynamics of the people of Asokore Mampong Municipality in the management of human waste at the community level
2. To investigate how the community's religious life and perception influence their hygiene behaviours and defecatory practices
3. To investigate the churches and pastors reaction to the practice of open defecations in the community.

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[10] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals*. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City: 2006). 55-1252

[11] Cotton, A., Franceys, R., Pickford, J. & Saywell, D. *On-plot sanitation in low income urban communities*: Water, Engineering and Development Centre (WEDC): (Loughborough, UK: 1998). 5

[12] Douglas, M., & Wilddavsky, A. Risk and culture: *An essay on the selection of technological and environmental dangers*. Berkeley: (University of California Press: 1982). 66

1.4 Research Questions

The main research question of the study is; What is theological response to sanitation? The sub – research questions are:

1. What is the influence of socio-demographic dynamics of the people of Asokore Mampong Municipality in the management of human waste at the community level?
2. How does the community's religious life and perception influence their hygiene behaviours and defecatory practices?
3. What are churches and pastors reaction to the practice of open defecations in the community?

1.5 Methodology

This study follows the study design of the mixed methods approach. It employs both quantitative and qualitative data for the study. A research design is the definition and statement of a general research or strategy taken for a given project, according to the reasons for such an approach. It is a blueprint or set of plans for doing the study[13]. It defines the structure of each study and describes how it is put together.

Primary and secondary data were also utilised in this investigation. Asokore Mampong Municipality provided primary data. These types of data covered the planned operations and how they impacted community cleanliness and open defecation, while the secondary data consists of sanitation trends in different districts. This data was obtained from the various municipal authorities as well as magazines and books. The population surveyed consisted of residents within the community, and the non-

[13] Creswell, J. W., & Plano Clark, V.L. *Designing and conducting mixed methods research (3rd ed)*, (2018). 101

probability sampling was used together with the purposive sampling technique to draw a sample size of 350 from the population.

Again, the study used the questionnaire to collect data from respondents. The data was finally analyzed using SPSS to create tables and charts for easy understanding and presentation of implications.

1.6 Justification of the Study/Study Area

This research focuses on theological responses to open defecation and sanitary issues in Asokore Mampong Municipality. The Municipality can be described as a community of heterogeneous ethnic groups. The ethnic group are Akan (40.9%), followed by people from Northern Ghana (36.7%), the Guans (10.7%), Ewes (3.0%) and Ga-dangme.

Islamic religion is most dominant among all the religious groups in the municipality with 55.4 percent representation. The Christians follows with 41.8 percent, and other religious groups constitute 2.8 percent[14]. Although the study area is a planned settlement, this community has changed significantly from housing humans to housing both humans and animals (sheep and goats). This has led to high rates of disease, including cholera and malaria. Poor provision of utilities, poor sanitation, insufficient toilet facilities, expansion of residential buildings, congestion and poor roads, and substandard buildings are the manifestation of the slum traits in Asawase, Aboabo and Aboabo extension. The above description gives more rooms for practicing open defecation in the municipality[15].

[14] GSS (Ghana Statistical Service), *Population and Housing Census: Summary Report of Final Results*, GSS, (Accra: Ghana, 2021). 52

[15] GSS (Ghana Statistical Service), *Population and Housing Census: Summary Report of Final Results*, GSS, (Accra: Ghana, 2021). 52

1.7 Significance of the Study.

The importance of the study lies in its ability to help educate about the adverse impacts of open defecation on individuals, while ensuring enforcement and sustainable management of sanitation for all in formulating the Sustainable Development Goals (SDGs). The District Implementation Committee (DIC), for example, will find it valuable and the Environmental Protection Agencies (EPA). Nonetheless, the findings of this study fill in the gaps and propose a number of methods for reducing open defecation practices in various areas. This study also allows researchers, academics, and other stakeholders to better understand how hygiene and open defecation affect the community. It also serves as a basis for future research to improve sanitation.

1.8 Purpose of the Study

The study attempts to examine the hygiene and defecation preferences and practices in the Asokore Mampong Municipality. It also attempts to examine socio-demographic factors affecting defecation practices in Asokore Mampong Municipality. Ultimately, the study intends to examine and interpret the theological response to open defecation habits as well as sanitation by using Deuteronomy 23:13 - 14.3"As part of your equipment have something to dig with, and when you relieve yourself, dig a hole and cover up your excrement. For the LORD your God moves about in your camp to protect you and to deliver your enemies to you. Your camp must be holy, so that he will not see among you anything indecent and turn away from you"

1.9 Limitation of the study

Limitations are a potential weakness of the study that are beyond the control of the researcher and can affect the trustworthiness of the findings. In research, limitations are

inevitable because of unforeseen and unavoidable circumstances. The following were some of studies limitation;

In other to reduce reluctance of respondents to answer questions, motivational strategy were used to enhance participation. Also, the participants were assured of confidentiality that their names and all possible research content that can identify them apart from basic information was consciously thought through and not indicated in the study instruments. The researcher was only able to identify the questionnaires and linked it to the participants through the use of numbers and codes. This enables the researcher to get the cooperation of the respondent

1.10 Organization of the Study

The thesis is organized into five chapters: the first covers the background, problem statement, research aims, research questions, study significance, methodology, study purpose, study justification and limitation of the study. Chapter 2 provides an overview of the relevant literature on the study. It examines critical questions of the study by reviewing relevant secondary data on the biblical passages concerning open defecation (OD), religious responses to open defecation, theories on communication and behaviour change, and the impact of open defecation on hygiene in Ghana. Chapter three, containing the theological responses, gives a brief profile of the Ghanaian people on religion, people's world view on the environment, considering the Christian, Islamic and African traditional perspectives on open defecation and people's hygiene, which is the main focus of this research. Chapter Four deals with a brief profile of the study area, considering the geographical location of the area, people's economic activities, religious life, social life, educational life, agricultural life, data collection, and detailed analysis of the results, along with Results and discussions of research. Tables, figures, diagrams and

other illustrations are used to present the results. The summary of the results, conclusions and recommendations of the research are addressed considering questions arising from the study in Chapter Five.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter aims to outline the study's constraints as well as review the scientific literature in depth in relation to the research objectives. It gives a review of relevant literature on open defecation, hygiene and sanitation. Until recently, many intervention strategies have focused on household access to latrines as the most important sign of sanitation provision.

However, there needs to be a change or an expanded understanding of the term sanitation. Sanitation is best defined as the aseptic collection and disposal of faeces and municipal liquid waste in a way that does not endanger the health of individuals or the community at large.[16]

2.1 Definition of Concepts

This portion of the study seeks to define the various terms and concepts utilized in order to place them in the proper perspective for a thorough understanding of the research. Several authors and authority have attempted to define the term hygiene. The meaning of the term cleanliness varies based on the speaker, situation, and region. Human excrement refers to urine and excrement in this context, while hygiene refers to the disposal and disposal of human excrement. To put it another way, sanitation refers to the upkeep of sanitary conditions through rubbish collection and sanitation services.

[16] Cotton, A. and Saywell, D."*On-plot sanitation in low-income urban communities*". Water Engineering and Development Centre (WEDC), (Loughborough University: Leicestershire, UK, (1998).13-30

Again, many preventive measures have previously emphasized household proximity to latrines as the primary indicator of sanitation coverage. However, there may be a shift in the definition of sanitation or a broadening of its scope. Sanitation is better described as the process of gathering and disposing of excreta and community liquid waste in a germ-free manner such that the welfare of individuals and the community as a whole is not jeopardized[17].Our personal wellbeing is influenced by the state of our surroundings. Individuals can achieve their full physical, mental, and social capacity in a healthy world free of harmful substances.

Hygiene refers to behaviors that can improve cleanliness and lead to good health, such as frequent handwashing, facial cleanliness, and bathing with soap and water. Many diseases can be prevented through proper hygiene practices, such as covering your cough and sneezes, washing hands after handling animals, and showering before you swim[18]. Open defecation, on the other hand, is defecation in public places, both inside and outside the community, due to lack of access to toilets, or improved sanitary facilities[19].

The word theology on the other hand comes from two Greek words, that is *theos*; ('God') and *logos* ('word') the knowledge of God therefore is the goal of theology[20] . It is the study of the nature of God and of religion and religious beliefs. For the purpose of this study, I adopt a working definition which is God's word. The theological

[17] Word Health Organization and UNICEF. *Progress on Household Drinking Water, Sanitation and Hygiene* 2000-2020: Five Years Into the SDGs

[18] Word Health Organization and UNICEF. *Progress on Household Drinking Water, Sanitation and Hygiene* 2000-2020: Five Years Into the SDGs

[19] Word Health Organization and UNICEF. *Progress on Household Drinking Water, Sanitation and Hygiene* 2000-2020: Five Years Into the SDGs

[20] Macmillan, *School Dictionary Bloomsbury Publishing: United Kingdom,* (2004). 763

response therefore means what does God's word says or God's reaction about open defecation[21].

Theological reflection is the practice of reflecting on life events in relation to one's Christian faith. This can be done individually or corporately. Theological reflection attempts to bring faith and everyday life together. Methods of theological reflection are often promoted within the spiritual formation movement and those involved in Renovaré[22].

The tradition of theological reflection can be found in many Christian denominations. Theological reflection attempts to see God's presence in our experiences, to understand the difference His presence makes in our lives, and to know what God expects as a result of this knowledge. The goal is a deeper understanding of the mystery of God and a wisdom born out of life experience seen through the lenses of God, His Word, the church, and dialogue with other believers or reflectively acquired wisdom of God formed in a particular life situation. The reflection necessarily assumes an interpretive process that seeks meaning and illumination through the joined sources of Word, faith, narrative, and the situation itself. Theological reflection acknowledges God's movement in all of life, thus these sources are each respected"[23].

There is certainly nothing wrong with reflecting on life's experiences in light of the Word of God. We are to meditate on the Word (Psalm 1) and allow the Scripture to interpret and influence all of life. David repeatedly recounted his troubles and life experiences in the Psalms. For example, in Psalm 31:9–13, David describes a time of grief and distress. Yet he does not stop there. David looked for and saw God in his

[21] www.andrews.edu/sem/dmin/about/*theological-reflection/index.html*, accessed 4/25/22
[22] www.andrews.edu/sem/dmin/about/*theological-reflection/index.html*, accessed 4/25/22
[23] https://www.gotquestion.org/*theological-reflection.html* 26/01/23

circumstances: “I will be glad and rejoice in your love, for you saw my affliction and knew the anguish of my soul. You have not given me into the hands of the enemy but have set my feet in a spacious place” (Psalm 31:7–8). And “Blessed be the Lord, for he has wondrously shown his steadfast love to me when I was in a besieged city” (Psalm 31:21, ESV). His conclusion is that “the Lord preserves those who are true to him” (verse 23, ESV) [24].

The issue of sanitation and more broadly its relationship to health has been a cause of concern to many. Today, with great leaps and bounds chalked by science and technology the literature on sanitation is quite respectable. As one surveys available literature, it is however obvious that there is a dearth of literature on defecatory practices. This is to be expected, for in very ‘civilized’ society faeces and defecation are not often issues of public discourse. This chapter reviews existing literature on the subject of defecation and faeces within the overarching context of sanitation. It starts by interrogating the socio-demographic characteristics that influence the defecatory preferences and practices of community members. It goes further to analyse the form of socialization children go through to acquire these defecatory behaviours and how that plays into adulthood. It finally identifies some community perceptions of dirt, smell, contagion and place and how that influences their adaptation of some defecatory practices. Mary Douglas’ concept of dirt ‘as matter out of place’ served as the main theory on which the study dwells[25].

Most people want toilets for reasons of convenience, privacy and status, rather than ensuring good sanitation or prevention of diseases leading to death[26] . The socio-

[24] https://www.gotquestion.org/*theological-reflection.html* 26/01/23

[25] Douglas, M. *Purity and danger. An analysis of the concept of pollution and taboo*. (New York, NY: Routledge Classics, 2002). 42-58

[26] GYAM. *Empowering Communities for Safe Water and Sanitation Delivery: Impact Assessment Report*, 2008.

economic determinants of open defecation in the study are many. The first is indiscipline. Indiscipline is an attitudinal problem involving people being careless. The next is poverty. Majority of the respondents cannot afford to construct improved ways of waste disposal because they are poor. Poor people live as sick people because they live in poor environments. Open defecation in the study area is also as a result of inability of state structures responsible for promoting sanitation at public places to provide the requisite facilities or maintaining the existing ones. Yet the laws enjoining landlords to provide sanitation facilities are not being enforced.

2.2 Global Impact of Sanitation and its Implication

The United Nations (UN) Water Conference, held in Argentina in 1977, held a decade of international drinking water and sanitation from 1981 to 1990 with the aim of making water and sanitation accessible to all[27] Despite the goal of improving both water and sanitation, water was the focus of attention, and by the end of the decade, 300 million more people had lived without proper sanitation since the beginning[28] The 2000 United Nations Millennium Declaration promised to eradicate extreme poverty and improve the health and well-being of all people around the world[29] The Millennium Development Goals (MDGs) are a set of eight important global development goals aimed at eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and women's empowerment, and reducing child mortality. It was established with the goal of lowering maternal mortality, enhancing mother health, and combating the disease. Diseases like

[27] Black, M., & Fawcett, B. *The last taboo: Opening the door on the global sanitation crisis*, (London: Earthscan Publications, 2008). 36-44

[28] Black, M., & Fawcett, B. *The last taboo: Opening the door on the global sanitation crisis,* (London: Earthscan Publications, 2008). 36-44

[29] United Nations, *Office of the High Commissioner for Human Rights (OHCHR), United Nations Human Settlements Programme (UN-HABITAT),* (2007).

HIV/AIDS and malaria increase environmental sustainability and foster global development collaborations. The World Summit on Sustainable Development, held in Johannesburg in September 2002, reaffirmed these aims while further emphasizing the importance of basic sanitation in the fight against poverty.[30]

According to WHO/UNICEF[31] the world's clean water target was met in 2010, five years earlier than anticipated. Between 1990 and 2010, 1.8 billion people got access to better sanitation, but 2.5 billion people still did not[32] If current trends continue, 2.4 billion people will still not have access to improved sanitation in 2015, and the coverage achieved will be 67% instead of 75%[33] He emphasizes the significance of the seventh MDG, stating that environmental sustainability is not a stand-alone goal, but rather a requirement for all MDGs.

Other MDGs are linked to the hygiene goals of the environmental goals. The United Nations Millennium Project Task Force on Water and Sanitation (2005) highlights the importance of water and sanitation management in attaining the MDGs, claiming that improving water and sanitation will make all eight MDGs easier to achieve. This not only supports environmental sustainability, but it also emphasizes the vast variety of hygiene consequences and the benefits of investing in hygiene management using suitable hygiene practices for other development goals.

[30] United Nations, *Office of the High Commissioner for Human Rights (OHCHR), United Nations Human Settlements Programme (UN-HABITAT),* (2007).

[31] WHO & UNICEF. *Progress on drinking water and sanitation: 2012 Update. USA: Joint Monitoring Programme for Water Supply and Sanitation,* (2012).

[32] Black, M., & Fawcett, B. *The last taboo: Opening the door on the global sanitation crisis,* (London: Earthscan Publications, 2008). 36-44

[33] Black, M., & Fawcett, B. The last taboo: *Opening the door on the global sanitation crisis,* (London: Earthscan Publications, 2008). 36-44

2.3 Sanitation in Ghana

The Government of Ghana's National Development Planning Commission (NDPC) and United Nations Development Program (UNDP) MDG reports show that the percentage of population available to improved sanitation will reach 21.2% instead of 52% targeted by the end of 2015[34]. Which indicates that there must be approximately five times increase in coverage to be able to achieve the set target.

In Ghana the low coverage of improved sanitation is partly caused by the fact that the Joint Monitoring Programme (JMP) does not classify improved facilities as such if they are shared and as noted earlier, over half of the Ghana's population are using shared facilities. The reason why JMP does not classify shared toilet facilities as improved is because they may not be hygienic, convenient and private enough for users[35].

Many stakeholders in the sanitation sector in Ghana have said that many shared toilet facilities in Ghana provide all the necessary parameters that characterize an improved toilet facility. It must also be noted that there is a wide difference in access to sanitation between the regions and also within the regions between rural and urban areas. For example, in the Greater Accra region of Ghana 25% of the population have access to improved sanitation while in the Northern region the corresponding proportion is 3%. Sanitation development has concentrated on urban centres and southern areas, while the poorest coverage is in the northern regions and rural communities[36].

[34] GYAM. *Empowering Communities for Safe Water and Sanitation Delivery: Impact Assessment Report,* 2008.

[35] WHO & UNICEF. Progress on drinking water and sanitation: 2012 Update. USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

[36] WHO & UNICEF. Progress on drinking water and sanitation: 2012 Update. USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

According to JMP Ghana has the greatest proportion of people using communal sanitary facilities in the world, at 58 percent[37]. The difference between Ghana and Bolivia which has the second best record in the shared hygiene category is 22 percentage points, suggesting that Ghanaians use public facilities extensively. Sharing sanitation is a global issue that is more frequent in cities than rural regions, including Ghana. In urban regions, 73% of the population shares sanitary facilities, compared to 43% in rural areas. Instead of sharing toilet facilities, open defecation is an issue in rural regions, with 33 percent of the rural population doing so[38] . The predominant use of shared sanitation facilities in urban areas is principally due to residence patterns of several households living in compound housing, but a more worrying development is the heavy reliance by many on public toilets.

2.3.1 Factors Influencing Sanitation Preference

Greater awareness of local people's experiences has been described as a key factor in the implementation of many initiatives[39] . This includes understanding the cultural importance of people, people's perspectives and the context in which the behavior is practiced. As a result, a person's hygiene behavior is influenced by their personality, economic status, and what they have been taught. A fecophile society, like China's, teaches compassion for dealing with faeces. Therefore, the use of faeces as fertilizer makes sense. A survey in four African countries discovered that the Bwaba ethnic

[37] WHO & UNICEF. Progress on drinking water and sanitation: 2012 Update. USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

[38] WHO & UNICEF. Progress on drinking water and sanitation: 2012 Update. USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

[39] Jenkins, H. *Digital Renaissance: convergence?* I diverge. Technology Review, (2001). 93

group in Burkina Faso claimed that if they were given food, they were forced to defecate in the food giver's field (and fertilize the crops) as a kind of reciprocity[40].

Open defecation was also considered an ancestral tradition in Mali and among Idoma people of Nigeria. It is taboo to defecate indoors and many older people still refuse to defecate indoors. Open defecation is culturally favored in Idoma societies. In their survey of people in rural southern India, Banda, Sarkar, Gopal, Gorindarajah, Harijan, Jeyakumar and Balraj found that the majority (74.2 percent) of people who defecated in fields claimed that there was no humiliation associated with this cultural practice[41] . In certain cases, cost was not an issue because they could afford cell phones, televisions, and protective weapons, but they chose not to invest in toilets. Be that as it may, faecophobic societies such as the Indian Hindus and the Akans of Ghana discover dung as abominable and ceremonially defiling; In fact, the words used to represent it are considered hostile.[42] This will undoubtedly affect the sanitary facilities chosen, as they are not exposed to faeces. Additionally, individuals in Mali, Ghana and Nigeria felt humiliated or embarrassed when seen entering a toilet.[43]

According to Nawab, they really appreciate that there's no queue, which means they're not under pressure to finish as soon as possible in the public restroom. They said they were at peace when defecating in the open air, away from other people's odors. None of these characteristics are present in a latrine or flushing facility. Others thought that

[40] Dittmer, A. *towards Total Sanitation: Socio-cultural barriers and triggers to Total Sanitation in West Africa. Water Aid Report,* (2009).

[41] Banda, K., Sarkar, R., Gopal, S., Gopal, S., Gorindarajah, J., Harijan, B. B., Jeyakumar, M. B. & Balraj, V. Water Handling, *Sanitation and Defecation Practices in Rural Southern India*: A Knowledge,
Attitudes and Practices Study. (Transactions of the Royal Society of Tropical Medicine and Hygiene, 2007). 1124-1130

[42] Esrey, S. A., Gough, J., Rapapor, D., Sawyer, R., Simpson-Hebert, M., Vargas, J., & Winblad, U. *Ecological sanitation*. (Sweden: Stockholm Environment Institute, 1998). 19-53

[43] Dittmer, A. towards Total Sanitation: *Socio-cultural barriers and triggers to Total Sanitation in West Africa*. Water Aid Report, (2009).

the available solutions were not their first preference and that they would like to invest in something more fashionable, such as the WC, rather than dry toilets like the KVIP or Ecosan[44].

2.4 Theoretical Framework

The literature review helps explain how several competing concepts contribute to the explanation of human defecation practices, such as the concept of dirt, smell, transmission and place. Building on this, various ideas that help determine human defecation practices and tendencies are discussed in writing and applied in a manner comparable to the focus of the review. The Mary Douglas theory of dirt as unpleasant matter, which is an emblematic notion of cleanliness, will shape the premise of most conversations. This hypothesis comes from her best-known book *Purity and Danger*: *An Analysis of the Concept of Pollution and Taboo.*[45]

However, open defecation or defecation practices that allow people to enter fields, bushes, forests, bodies of water, or other vacant lots, rather than using the toilet facility to defecate 2.5 billion people live without access to improved sanitation, resulting in 1 billion (15%) defecation outdoors worldwide[46]. Open defecation perpetuate the vicious cycle of illness and poverty, making hygiene an important element of the health, social and economic environment.[47] The act of open defecation weighs on the already tense health system. Poor hygiene is known to be associated with the

[44] Nawab,. B., Nyborg I. L. P., Esser K. B., Jenssen P. D. *Cultural preferences in designing ecological sanitation systems in North West Frontier Province*, Parkistan. Journal of Environmental psychology, (2006): 8-23

[45] Douglas, M. *Purity and Danger. An Analysis of the Concept of Pollution and Taboo*. (New York, NY: Routledge Classics, 2002*).* 42-58

[46] Gupta, A., Hathi, P., Spears, D., Srivastav, N. and Vyas, S., *Understanding Open Defecation in rural india*: *Untouchable, pollution, and latrine pits*. Economic & Political Weekly, (2017): 59-66

[47] Gupta, A., Hathi, P., Spears, D., Srivastav, N. and Vyas, S., *Understanding Open Defecation in rural india*: *Untouchable, pollution, and latrine pits*. Economic & Political Weekly, (2017): 59-66

transmission of various diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid fever and polio.[48]

The practice of open defecation adds more burden to the already strained health system. Poor sanitation is known to be associated with a number of disease transmission, these include cholera, diarrhea, dysentery, hepatitis A, typhoid and polio. Open defecation is responsible for about 58% of all diarrheal deaths. Up to about 842, 000 persons in Low middle Income Countries (LMICs) are reported to die due to inadequate water, sanitation, and hygiene annually[49].

The global trend on open defecation rates shows a decline from 24% in 2019. It was also estimated that 16 countries reduced the rate of open defecation by at least 25% during the MDG period, while India (the world's highest) recorded a sharp decline of 31 percent[50]. Open defecation has been an issue in India. A report published by WaterAid stated that India had the highest number of people without access to basic sanitation despite efforts made by the Government of India under the Swachh Bharat Mission[51]. About 522 million people practiced open defecation in India in 2014, despite having access to a toilet. Many factors contributed to this, ranging from poverty to government corruption[52] [53].

[48] WHO & UNICEF. *Progress on drinking water and sanitation. 2017 Update. Joint Monitoring Programme for Water Supply and Sanitation*. Geneva, (2017).
[49] Jan Eliason's United Nations Deputy Secretary: *the campaign launch to end open defecation, (May 28, 2014).*
[50] WHO &UNICEF. *Progess on household drinking water, sanitation and hygiene 2000-2017*: Special focus on inequalities, (2019).
[51] Time of India., *India has highest number of people without basic sanitation,* (7 November 017).
[52] Coffey D Where India goes: abandoned toilet, stunted development and the costs of caste. Spears, Dean E. Noida, (Uttar Pradesh: 2017). 7-11
[53] Dinnoo S. "*Why do millions of Indians defecate in the open*" (17 June 2014). BBC News 6 march 2020

2.5 Open Defecation in Ghana

Many Ghanaian communities lack access to appropriate sanitation. According to Ghana Secretariat for Water Sector Restructuring (WSRS), around 40% of the population in urban centers and 35% in rural areas have access to renovated latrine offices. The country has also underperformed, with a sterilization rate of only 15%, making open defecation a major sanitation concern because people lack access to basic amenities.[54]

Open defecation issues in Ghana are of concern and Ghana was positioned second to Sudan in Africa for open poop, with 5,000,000 Ghanaians not approaching a latrine. UNICEF Ghana Water, Sanitation and Hygiene Division Chief Officer David Duncan notes that over the past 25 years Ghana has made one percent progress in disposing of education. However, according to him the sustained speed is not a big deal, he was confident that Ghana could achieve a society without open defecation within the four-year public goal provided activities are facilitated on all fronts[55]. It has been deeply argued that the use of shared sanitation should be considered unchanged. There are still a few steps to complete the approval for private and further developed disinfection. In any case, it is important to give a subdivision of how sharing is taught. Where shared families (offering to a specific family number who are, so to speak, connected or know each other), public latrines (mainly intended for the transit population, but mostly the main facility used by slums) and institutional toilets (school, church, workplaces, markets etc.[56]

[54] Connell, K. O. *What Influences Open Defecation and Latrine Ownership in Rural Households? Findings from a Global Review*. World Bank, (Washington: DC, USA, 2014), 5-16

[55] WHO & UNICEF. *Progress on drinking water and sanitation. 2017 Update. Joint Monitoring Programme for Water Supply and Sanitation*. Geneva, (2017).

[56] WHO, *Burden of Disease and Cost-Effectiveness Estimates*, WHO, Water Sanitation and Health (WSH), Geneva, Switzerland, (2014).

About 60.6% of Ghanaians live in compound houses rather than self-contained houses; characterized by several households sharing an open area or yard hence share all utilities including water, electricity and sanitation. Originally, traditional living style common in rural but now in urban and afore urban settings.[57]

It is however essential to interpret individually depending on each context studied, whether culturally acceptable or not for example experiences from Ghana and other sub-Saharan African countries illustrate how household shared sanitation may well fit with the sanitation choices of the households. A shared sanitation is considered as being at some point away from open defecation in the sanitation ladder. It contributed to a greater extent to the current achievements in sanitation in recent years[58].

The poor coverage of improved sanitation facilities in Ghana is partly due to the Joint Monitoring Program (JMP) failing to define upgraded facilities as such when they are shared, and as previously stated, more than half of Ghana's population uses shared facilities. Communal toilets are not classified as improved by JMP since they may not be hygienic, convenient, or private enough for users. Many players in Ghana's sanitation sector have stated that many community toilets in the country meet all of the criteria for an improved toilet facility. It should also be emphasized that there are significant differences in sanitation access between regions, as well as between rural and urban areas within regions. For example, 25% of the population in Ghana's Greater Accra region had access to improved sanitation, compared to only 3% in the northern

[57] GSS (Ghana Statistical Service), *Population and Housing Census: Summary Report of Final Results*, GSS, (Accra, 2021).

[58] WHO, *Burden of Disease and Cost-Eectiveness Estimates*, WHO, Water Sanitation and Health (WSH), Geneva, Switzerland, (2014).

region. The growth of sanitation is centered in urban and southern areas, with northern and rural populations receiving the least coverage.[59]

2.5.1 Open Defecation Free

Different academics and organizations have taken different approaches to open defecation, but they all mean the same thing: urinating outdoors or in public, regardless of the exact location, so long as the faeces are not separated from human touch, riverbanks, shells, bodies of water, behind trees, in undergrowth, gutters, shit tied and thrown in plastic bags, and in beeches are examples of such places. The disease that open defecation induces is the first and fore most important consequence. Cholera, typhoid, and dysentery are only a few of these illnesses. This is obtained by the use of polluted food and water, which may result in death[60].

In Ghana, poor sanitation is thought to be responsible for around 80% of all OPD cases reported. As a result of the chemicals used for anal cleansing during open defecation, physical damage to the body can occur in addition to illness and death. Popular materials used to clean the anus during open stool are leaves, corn cobs, and chopsticks. Such materials are very hard and durable and can quickly lead to anal irritation and bruising when cleaning after a bowel movement.[61]

Therefore, because of its effect on people preferences, the importance of religion in sanitary preference cannot be underestimated. The cultural preferences for the design of ecological sanitation systems in the NWP Pakistan study by Nawab, Wotiz and De

[59] WHO & UNICEF. *Progress on drinking water and sanitation: USA: Joint Monitoring Programme for Water Supply and Sanitation*, (2012).

[60] WHO & UNICEF. *Progress on drinking water and sanitation. 2017 Update. Joint Monitoring Programme for Water Supply and Sanitation*. Geneva, (2017).

[61] Adesope, O. M, Mathews –Njoku, E. C., Oguzor, N. S. and Ugwuja, V. C. *Effect of Socio-Economic Characteristics of Farmers on their Adoption of Organic Farming Practices,* (2012): 213

Luca suggested that Muslim anal purification activities, along with a strict prohibition of the religion of urine and faeces, were factors which affected their unwillingness to use urine-separating latrines. In most cases, flush toilets were favoured and latrine as old-fashioned and retrograde. The water closet (WC) fulfilled its function for most citizens by ensuring that feaces were removed from their immediate surroundings. Furthermore, since the WC is a wet machine, they will practice ablution after defecation.[62]

According to Cotton[63] the location of a latrine in the northeast curve of the plot was inappropriate to the people's faith, so they declined to use it. People settle on their defecatory preferences and rituals by looking at life from their own cultural and religious lenses.[64]

2.5.2 The Attitudinal Argument

The claims about attitudes are based on issues that affect both individuals and groups. Open defecation can be explained by a lack of knowledge or ignorance, as well as socio-cultural and/or religious beliefs. People's willingness to accept or reject new ideas is determined by their level of acquaintance. People emerge as privy to what goes on and may make selections approximately their lifestyles due to their experience. For example, you could evaluate present behaviors (the reputation quo) including open defecation to new behaviors (innovation) delivered to alternate the

[62] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals*. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City: 2006), 55-1252.

[63] Cotton, A., Franceys, R., Pickford, J. & Saywell, D. *On-plot sanitation in low income urban communities*: (Water, Engineering and Development Centre (WEDC): Loughborough, UK, 1998), 5.

[64] Douglas, M., & Wilddavsky, A. *Risk and culture: An essay on the selection of technological and environmental dangers*. (Berkeley: University of California Press, 2002), 42-58.

reputation quo (e.g. open defecation free) and make an knowledgeable decision[65]. Rated knowledge/awareness to be a number one way of preventing open defecation. If people are well informed about the consequences of open defecation and if they become aware of their vulnerability to the problem, then they will look for solutions to the problem or adopt available innovation to eliminate or reduce the impact of the problem, for example adoption of open defecation free to fight against diseases cause by open defecation, and the lack of knowledge regarding an existing problem will cause a rejection of an intervention stated that understanding the root causes of a problem helps in solving it[66].

Understanding the factors that cause the problem can be very helpful. First and foremost, it helps prevent problems from occurring in the future and helps minimize the impact of the problem. In addition, it helps reduce the amount of money that would have been spent solving the problem[67].

These explanations have come to support the common saying that, knowing a problem is half way solving it. No matter the amount of money spent in searching for the root causes of a problem, it will always be better than solving it without knowing the causes. Kasi argued that people defecate in the open not because they cannot physically accessed toilets or not because they cannot afford to build and maintain household latrines and not because they cannot pay to access the service of a private

[65] Benny G. *Sanitation Program*: A Glass Half-full. Economic and Political Weekly, (2009). Vol.44, 8

[66] Benny G. *Sanitation Program*: A Glass Half-full. Economic and Political Weekly, (2009).Vol.44, No.8

[67] Benny G. *Sanitation Program*: A Glass Half-full. Economic and Political Weekly, (2009). Vol.44, No.8

or public toilet, but because they have not seen anything wrong in practicing open defecation[68].

Much of the root cause of this ignorance stemmed from the fact that majority of people in the rural areas do not attach seriousness to sanitation and for that matter do not participate in sanitation improvement programmes organized for them. Most of the illiterates would have become aware of the importance of good practices of sanitation and the consequences of bad sanitation practices through such meetings, which would have enabled them to make an informed decision regarding their sanitation practices. It is obvious that majority of rural population did not attend school and for that matter would not have learned such practices from school and it will be difficult for such people to know them if they do not attend and participate in sanitation improvement programs. Therefore the tendency of people in this calibre practicing open defecation will be high. In fact the argument is that, open defecation is an old habit which has been practiced for a very long time and has become part and parcel of the life of the people especially the rural duelers, and is therefore needless to give it attention. Abandoning open defecation will be difficult since it has to do with attitudes.[69]

Further review revealed belief systems (religious and cultural beliefs) as part of the causes of open defecation and its negative impacts. The belief people hold regarding hygiene and disease influences their attitudes and behaviours towards sanitation practices[70].

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[68] Kazi, F. B. S. Willingness to Pay for Improved Sanitation service sand its Implication on Demand Responsive approach of BRAC Water, *Sanitation, and Hygiene Program*. Research and Evaluation Division, BRAC 75 Mohakhali, Dhaka 1212, (Bangladesh: 2008), 1.

[69] Mehrotra, N. and Patnaik, S. M. *Culture versus Coercion*; Other Side of Nirmal Gram Yojana. Economic and Political Weekly, (2008). Vol.43, 43

[70] Whittington, D., Lauria, D. T., Wright, A. M., Choe, K., Hughes, J. F. & Swarna, V. "*Household Demand for Improved Sanitation Services in Kumasi*, Ghana: A Contingent Valuation Study (Water Resources Research, 2005). 29

Many people especially in Africa mostly perceived every situation in which they are as what their gods want them to be. The belief is that, they are either rewarded or punished according to their deeds. For instance, anytime there is an outbreak of disease (example cholera) they think it is a punishment from their gods for having wronged them and for that matter; they have to consult and appease them before they can be free from such calamity. They also perceived good health as blessings from the gods and should not be attributed to practices like personal or environmental hygiene. Such people may not see anything wrong with open defecation and as such may not accept open defecation free intervention as part of the measures to control a spread of disease in their communities.[71]

Jenkins believed that it is the lack of knowledge of or misinformation about existing sanitation interventions as well as bad experiences of beneficiaries with respect to the technologies introduced in the past that have contributed to the low demand for toilet facilities[72]. In some cases, people were unaware of the sanitation interventions being promoted so did not access it as was reported in Kumasi, Ghana[73].

To Bohman the lack of a toilet facility does not seem to be the priority of the majority of people living in low-income dwellings in Ghana due to the pressure of meeting some basic needs like food and shelter. Hence, a majority of households either rely on public toilets or practise open defecation while a few own household toilets[74]. In some

[71] Food for the Hungry Barrier Analysis: *a Tool for Improving Behaviour Change Communication in Child Survival and Community Development Programmes*. (2004)

[72] Jenkins, M. W. & Curtis, V. Achieving the "good life": *Why some people want latrines in rural Benin*. Soc. Sci. Med., 61, (2005), 2446–2459.

[73] Whittington, D., Lauria, D. T., Wright, A. M., Choe, K., Hughes, J. F. & Swarna, V. "*Household Demand for Improved Sanitation Services in Kumasi*, Ghana: A Contingent Valuation Study" Water Resources Research, 29, (6). (2005), 1539-1560.

[74] Bohman, A. Framing the Water and Sanitation Challenge: *A History of urban water supply and sanitation in Ghana*, (Umea: Umea University, Sweden. 2010).

instances, toilets are said to be converted into rooms for renting due to the high demand for accommodation especially in the urban and peri-urban settings. Although this is against building regulations, an Environmental officer who was interviewed, this is possible due to the lack of both supervision and the enforcement of the law by building inspectors and Environmental Health Officers. According to Bohman, unlike water, which seem to have no alternatives, people seem to have other options when it comes to sanitation and that accounts for the low uptake. Furthermore, although many private sector actors are into the provision of water, only a few are willing to invest in sanitation, due to the low demand.[75]

Clearly, the above discussions have enumerated several factors identified as contributing to the low uptake of sanitation globally and in Ghana. These include infrastructural or technological barriers, economic restraints, and approaches to sanitation promotion, behavioural factors and socio-cultural factors,[76] notes that cultural barriers, market failure and the lack of information prevent households from making informed decisions about sanitation attributed the situation to the lack of space for the appropriate facility; the availability of public latrines, which reduces the motivation to own a household facility; the tenancy and tenure of occupancy; and the low income of the target population. Having had some understanding of factors contributing to the low uptake of sanitation and highlighting issues relating to hygiene behaviour and defecatory practices, the next session will help us gain more insight into the theoretical underpinnings guiding the study[77].

[75] Bohman, A. Framing the Water and Sanitation Challenge: *A History of urban water supply and sanitation in Ghana*, (Umea: Umea University, Sweden. 2010).

[76] Senor, K. *In the market for proper sanitation.* Bulletin of the World Health Organization, (2010). 88.

[77] Kwarteng, S. O., Awuah, E., & Nyarko, K. B. *Water, Sanitation and Hygiene Sustainable Development and Multi-sectoral Approaches. Shifting from public shared toilets to home toilets*

2.6 Factors contributing to Open Defecation

It has been discovered that some ingredients enhance the likelihood of open defecation. There are several factors, for example, absence of latrines and a few latrines being feebly developed and there are many explain latrines. Be that as it may, the primary issue is the attitude of individuals both in the metropolitan and country regions. For instance, guardians and grandparents are seen by their youngsters excreting openly. Likewise, a conviction amid the ranchers excreting in the nurseries gives regular richness to the dirt and invigorates their brains[78] A large portion of the open defecation rehearses are being done in rustic settings by straightforwardly discharging in the open grounds, wildernesses, hedges and water bodies and for the most part nations procure for low pay. This is for the most part connected with country networks not approaching sufficient sanitation.[79]

Open defecation among children is a norm in most Asian countries (Bangladesh, Philippines, Indonesia, Sri-Lanka), as well as Southeast American countries (Peru) and some African countries (Burkina Faso). The normal act of open defecation is to wash infant faeces in bodies of water such as streams, canals, and lakes. Habitual infants are supposed to defecate in beds, on their mothers' laps, with the ultimate goal that the excrement can be invested in clothes to be laundered later. The children's excrement is collected or picked with paper, straws, leaves and picks.[80]

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in urban settlements: Implications of household demand in Kumasi, Ghana Addis Ababa (Ethiopia). (2009). 502-519

[78] WHO & UNICEF. "*Progress on Drinking Water and Sanitation*", JMP's (2014).

[79] Obeng, P. A., Keraita, B., Oduro-Kwarteng, S., Bregnhøj, H., Abaidoo, R. C., Awuah, E., & Konradsen, F. *Usage and barriers to use of latrines in a Ghanaian per urban community*. *Environmental Processes*, 2(1), (2015), 261-274.

[80] Surya, A. V., Vyas, A., Krishna, M., & Abidi, N. *Identifying Determinants of Toilet Usage by Poor in Urban India*. (Procedia: Computer Science, 2017), 634-641.

Factors, for example, absence of cash, lack of land, occupants residing in the places of the landowners and deliberate refusal to construct toilets or latrines constitute tremendous advancement of open excretion. In a research conducted by Geruso these variables prompted 33.1% individuals included themselves in defecating in open. In the interim 62.5% utilized their family latrines and 4.3% utilized public latrines[81].

Around the world, the rate of open defecation executions fell from 25% in 1990 to 17% in 2008. In sub-Saharan Africa, for example, the number of open defecation practices decreased by 25%, and overall the number of people performing open defecation increased from 1880 million from 1990 to 2008.[82] Meanwhile, in South Asia, the number increased by 66% to 44% back from 1990 to 2008. The total number of people who cannot bear to go to latrines or toilets is 2.5 billion, especially in underdeveloped countries, and of this number 1 billion go to open defecation. Partially with four people one proceeds to open defecation, which later leads to neediness and inability to develop the latrines.

A study conducted in Odisha showed that tolerating the use of toilets is bad, and that is because of various factors like ceremonies, distinctions in sexual orientation, and the age of individuals, conjugal status, social approaches to everyday life and the way of life of individuals. A third of the population from peri-metropolitan networks in southern Ghana are accounted for to favour the utilization of shared latrines contrasted with responsibility for because of issues connected with land residency,

[81] Geruso, M. and Spears, D., *Neighborhood sanitation and infant mortality*. American Economic Journal: Applied Economics 10(2), (2018): 125-62.

[82] WHO/UNICEF. Diarrhoea: *Why children are still dying and what can be done*. (2010).

reasonableness of one as well as other natural and actual related hindrances towards the responsibility for household toilet.[83]

Issues related to Land and its tenure are particularly well-known barriers to achieve a required sanitation in many sub-Saharan Africa, those who do not own land legally including tenants and some traditional unclear ownerships have often to depend on the instructions of the right full land owner or care taker before building private toilets on land. Urban settings even find it more difficult to settle since such settlements are often temporary and the owners‟ plans may not necessarily include constructing a private latrine as rents are often income generating in nature.

In any case, in 2015 it was approximated that 2.4 billion people did not approach satisfactory disinfection and around 1 billion of the populaces in all actuality do O.D, largest number live in sub-Saharan Africa and southern Asia.[84]

Age and orientation of individuals who practice OD is viewed by many examinations as related with the propensity for open defecation.[85] Coffey revealed that barring for among little youngsters, it is for the most part men who transparently poop in contrast with the ladies. It was additionally distinguished that all through late early stages and youth years, there was diminishing of O.D in youthful females with course to lavatories. Two intentions were given for the fluctuations among females and guys. Initial, an inclination among young ladies to utilize toilets, or a north Indian social standard that keeps ladies in their regenerative years inside the home. Comparative contrasts in open defecation were accounted among more seasoned individuals.

[83] GSS (Ghana Statistical Service*), Population and Housing Census: Summary Report of Final Results*, GSS, Accra, Ghana, 2021.

[84] WHO & UNICEF. "*Progress on Drinking Water and Sanitation*", JMP's 2015.

[85] Coffey, D., Gupta, A., Hathi, P., Khurana, N., Spears, D., Srivastav, N. and Vyas, S., Revealed Preference for open defecation. Economic & Political Weekly, 49(38), (2014): 43.

Similar differences in open defecation were accounted among older people. Most people in the adult age range, practice open defecation. Secondly, the study also indicated that, grown-up individuals are associates of previous cohorts, born into past years when defecating openly was common than it is today. However, open defecation falls faster among the oldest household members[86].

2.7 Beliefs, effects, and perceptions on open defecation

Open defecation and human excrement are respected in different ways by different societies, and it is fascinating to recognize them. Some people endure to some extent, while others are better when they are hidden. Some societies consider it incredibly horrifying and repulsive, while others have had to endure the handling of human excrement.

In certain areas in china night workers carry away human excrement on "honey trucks", and in Vietnam it has long been practiced to prepare paddy fields with new human dung. In many societies, the disposal of human excrete by people is considered indescribable[87]. The practice of the open excretion, by any means and in any form, has a significant negative impact on people and the environment.

2.7.1 Health effect

The practice of open defecation puts an additional strain on the already strained healthcare system. Unfortunate disinfection is known to be associated with the transmission of some diseases, including cholera, diarrhea, diarrhea, hepatitis A,

[86] Coffey, D., Gupta, A., Hathi, P., Khurana, N., Spears, D., Srivastav, N. and Vyas, S., Revealed Preference for open defecation. Economic & Political Weekly, 49(38), (2014): 43.

[87] Routray, P., Schmidt, W.P., Boisson, S., Clasen, T. and Jenkins, M.W., Socio-culture and behavior factors constraining latrine adoption in rural coastal Odisha: An exploratory qualitative study. BMC Public Health, 15(1), (2015): 880

typhoid, and polio.[88] Open defecation is answerable for around 58% of every diarrheal demise. Up to around 842, 000 people in Low center Income Countries (LCICs) are accounted for to bite the dust because of lacking water, disinfection, and cleanliness every year. Destructive looseness of the bowels is fundamentally because of open defecation, and it is assessed around 2000 kids younger than five are survivors of this and in at regular intervals they die, this is the sort of thing that is avoidable and is generally in thickly populated nations like India. Kids at this age do not separate between the great and awful things and everything in implied for them to be placed in the mouth. In the rustic regions where, open defecation is wild by both people and creatures. Kids wind up eating them and microscopic organisms, infections and parasites observe agreeable home beginnings tainting their digestion tracts coming about to lose bowels. Open defecation represents a genuine general wellbeing danger to youngsters and is probably the greatest deterrent to fulfilment of the Millennium Development Goals (MDGs). The drop in oral course is the reason for diarrheal diseases as well as contamination. It also increases the transmission routes for polio and numerous other diseases such as cholera, giardiasis and hepatitis A.

In sub-Saharan Africa, open defecation had declined from 22% to 18% from 2015 to 2020, but Only 27 per cent of Sub-Saharan Africa's population has access to basic sanitation and 220 million people across the continent still defecate outside, rather than using a toilet, according to the World Bank.[89] The World Health Organization stated that disinfection encompasses various practices and was valued the most uncompromisingly of all outdoor defecation. India is a global leader in open

[88] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation, (2017).

[89] https://www.scidev.net/sub-saharan-africa/news/*africa-grapples-with-ending-open defecation*/ 23/01/2023

defecation, with 60% of individuals practicing open defecation. There is high pace of sicknesses and passings in view of ill-advised garbage removal particularly human waste, messy drinking water and chaotic cleanliness. Of the infections, loose bowels are the main justification behind destruction in the youthful ones.[90]

The training is the fundamental justification for diarrheal passings in youngsters under five years, bringing about around 1,600 kids dying consistently.[91] Around 43% of kids in India experience the ill effects of ailing health, influencing young youngsters, and obstructing their learning capacities. A new report by Dean Spears of the Center for Development

Economics along with Oliver Cumming of the London School of Hygiene and Tropical Medicine in Delhi found that a 10 percent increase in open defecation was associated with a 0.7 percent increase in both disability as well as the serious handicap. As indicated by world Health Organization[92] 1.7 billion cases are accounted for every year with around 800,000 misfortunes of lives of youngsters younger than 5 years worldwide. It is being projected those 1.1 billion people 15% overall actually practice Open poop. The United Nation desires to meet the Sustainable Development Goals (SDG 6 objective 2) of guaranteeing that by 2030 open defecation is finished with a sign everybody gains admittance to reasonable and legitimate disinfection and neatness thinking about the young ladies and ladies who are the most presented to these circumstances. In Ethiopia, most Public Health issues are a result of unfortunate

[90] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

[91] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

[92] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation, (2012).

sterilization and youngsters are the ones incredibly impacted.[93] Transferable contaminations have been accounted for to be 60% to 80% of unexpected issues in Ethiopia and these issues are because of messy water, deficient disinfection, and unfortunate cleanliness.

In another survey, the researchers were posed an open-finished inquiry about the potential advantages of restroom use and open defecation. Among the individuals who defecate in the open, just 26% notice wellbeing idealizations from involving lavatory as a benefit that perhaps will influence from setting up a restroom; also, the individuals who routinely discuss the comfort of having a toilet for individuals who as of now have stomach diseases. In that equivalent review, further open-finished question about why youngsters get looseness of the bowels. Just 26% answered with a response that shows a comprehension of any conceivable irresistible reasons for diarrhoeal sickness.

2.7.2 Effect on the Economy

Beyond human waste and persistence, the world's lack of water and sterilization undermines prosperity and hinders monetary development. Unfortunate sterilization has numerous real or likely adverse consequences on populaces in a country. Efficiency misfortunes connected to that shortfall are dulling the endeavours of millions of the world's most unfortunate individuals to sort out their method of destitution and keeping down entire nations. Unfortunate sterilization rehearses adversely affect the economy and public advancement how they cripple workers ‟ efficiency, their life span, and their capacity to contribute and save. The financial

[93] Ayele, M. *Sanitation preference and household latrine designs.* A Water Aid Ethiopia Briefing, (2005), 1.

effect of insufficient disinfection is $38.4 million in most non-industrial countries, or 6.4 % of India's total national output[94].

Open defecation has significantly impacted the monetary status of individuals particularly those with unfortunate disinfection. In Kenya, the unfortunate population for the most part participates in open excretion, which involves open stool more often than the wealthy. However, open excretion also has some social costs such as loss of pride and security and this affects young women in general (school going) and ladies (incapacitated) as well as orientation viciousness to the ladies particularly around evening time while going to search for where to defecate.[95]

2.7.3 Effect on Poverty

Inappropriate disinfection and open defecation in a roundabout way add to neediness as they lead to polluted water sources, soil and land. Once destroyed by illness, youngsters can not finish their proper schooling, and are subsequently obstructed in their abilities to work, accommodate themselves, and teach their kids. Ailment inside the local area's senior populace addresses a huge channel on family financial plans and medical care assets. These variables just sustain the neediness cycle.

2.8 Determinants of Open Defecation

2.8.1 Material/monetary imperatives.

Studies have shown that the practicality and reception level of the family latrine office depends on the socio-economics of the family student. Concentrates by WHO and

[94] Hathi, P., Spears, D. and Coffey, D., *Can collective action strategies motivate behaviour change to reduce open defecation in rural India*? Waterline, 35(2), (2016):118-135.
[95] Water-Aid. Abandoning Open Defecation*: Comparison and Adaptation of Social Change Dynamics*, Water Aid Ghana, Accra, Ghana. (2008).

UNICEF observed that the social and abundance status of family impacts regardless of whether the family embraces a family latrine office. The creators battled that normally, richer families which are more instructed are bound to take on or utilize further developed latrine office not at all like the low pay and less taught families. The creators further added that low pay and less instructed families typically take on and utilize unchanged sorts of latrine office. Different investigations have exhibited that, since richer families are not monetarily obliged, they are bound to spend a greater amount of their pay on the development of their family latrine than low-pay families[96].

A study by Anand[97] affirmed that higher wage or wealthier families will inevitably have to spend more than 5% of their wages on manure or excrement removal, while low wage families will likely spend only 2-5% of their wages. In consent Anand added that monetary limitations as far as building further developed latrine office generally present two significant difficulties.

Initially, it forestalls family heads or proprietors to give or build a latrine office. Also, it causes the exorbitance of tolls charged by open latrine administrators. These requirements were additionally affirmed in a review in Benin.[98]

Also, Jenkins likewise understood that moderateness imperatives, for example, absence of admittance to credit, insufficient money or saw cost of restroom and destitution, has been the obstruction for family latrine development[99].

[96] WHO & UNICEF. Progress on drinking water and sanitation: USA: Joint Monitoring Programme for Water Supply and Sanitation. (2012).

[97] Anand, P. B. Waste management in Madras revisited, *Environment and Urbanization*, vol. 11, (1999), 161–176.

[98] Gross, E., & Gunther, I. *Why do households invest in sanitation in rural Benin*: Health, wealth, or prestige, *Water Resource Research*, Vol. 50, (2014), 8314–8329.

[99] Jenkins, M. W. *Sanitation promotion in developing countries: Why the latrines of Benin are few and far between.* (Unpublished PhD dissertation). Dept. of Civil and Environ. Engineering, (University of California, 1999).

Studies directed by Robinson have thought that unfortunate networks have some familiarity with great cleanliness ways of behaving yet miss the mark on means and motivating forces to construct or utilize the offices. In that, utilizing further developed sterilization office depicts great cleanliness ways of behaving which deflect the different gamble that is related with unchanged disinfection rehearses. Such advantages are probably going to be missed by poor or low-pay families who are probably not going to put resources into their family toilet facility[100].

In addition to financial constraints, studies have also shown that cultural perceptions have more substantial influence on latrines adoption than household socio-demographics. For instance, a study in India by Coffey,[101] concluded that cultural installed perceptions about toilet facilities influence the adoption and usage of such facilities. The authors opined that culturally, building a household toilet is perceived as a luxurious asset. However, the ability to afford or access these luxurious toilet facilities depends on whether the facility can be afforded or not. To overcome the issue of affordability, there has been subsidy driven global effort to aid households to afford household latrines. However, studies have shown that such interventions did not yield the expected outcomes. For instance, availability and access to loan or credit facility were highlighted as a significant factor that aided households to access and adopt the various types of quality toilet facility in Indonesia and Tanzania[102] the driven or hardware provision interventions on sanitation outcomes. This means that the extent

[100] Robinson, A. *Community-led total sanitation*. *Br. Travel Health Assoc*. J., 7 (2006).18-19

[101] Coffey, D., Gupta, A., Hathi, P., Khurana, N., Spears, D., Srivastav, N., & Vyas, S. *Revealed preference for open defecation*: Evidence from a new survey in rural north India. (Research institute for compassionate economics, Amston, 2014): 43-47

[102] Mukherjee, N., Robiarto, A., Saputra, E., & Wartono, D. *Achieving and sustaining open defecation free communities*: learning from east java. Water and Sanitation Program. (2012).

to which financial and material constraints can be overcome by offering external support to boost the supply or usage of the toilet facility is yet to be established.

A study by Santo in Brazil positioned the expense of latrine office as minimal determinant for toilet reception. The creators recommended that perspectives and insights towards lavatory use, orientation, age, and number of youngsters straightforwardly impact choices to take on and utilize a toilet. [103]

Additionally, a study by Banda in rural India confirmed that open defecation is traditionally encouraged without any stigma attached. They emphasized that these people placed less value on building a toilet facility although they could afford. Instead, they prefer to satisfy wants such as such buying televisions, mobile phones and weapons for protection. Most at times, the desire to build or not to build a latrine is influenced by the various preferences that are attached to the building of the toilet facility amidst the unlimited human wants. Though resources might be available, the building of a household toilet depends on the priorities attached to it. Hence, irrespective of availability and non-availability of finance and material constraint, changes in behaviour and attitude in terms of consistent latrines usage and open defecation practice as well as valuing the building of toilet facility is paramount[104].

2.8.2 Educational status.

Studies have shown that the level of education influences sterilization practice, the instructional bias can achieve improvement in safe clean practices as well as practices

[103] Santos, A.C., Roberts J.A., Barreto, M .L., & Cairncross, S. *Demand for sanitation in Salvador, Br*azil: a hybrid choice approach. *Soc. Sci. Med*., 72 (8), (2011**),** 1325- 1332.

[104] Banda, K., Sarkar, R., Gopal, S., Gopal, S., Gorindarajah, J., Harijan, B. B., Jeyakumar, M. B. & Balraj, V. Water Handling, *Sanitation and Defecation Practices in Rural Southern India*: A Knowledge, Attitudes and Practices Study. Transactions of the Royal Society of Tropical Medicine and Hygiene, (2007). 101(11), 1124-1130.

that coordinate good wellness/clean behaviour with health-related data. Along these lines, Briceno[105] added that informed individuals for the most part value the advantages and beneficial outcomes of appropriate sterilization rehearses. This implies that instructive tendency led to supported solid way of behaving and rehearses. The impact of instructive level on latrine reception and open defecation rehearses was additionally examined in Wa, Ghana, by Osumanu[106] From this review; that is what the creators found, 65% of uninformed family heads were probably going to rehearse open defecation since they do not have a family latrine office. As opposed to the uninformed, the creators found that around 18.5 percent of taught families were more averse to open defecation. The creators credited this to the way that there is higher information on the impacts of defecating straightforwardly and the need to assemble family latrine offices among instructed families. The creators thought that the capacity of the informed family to take on a latrine office is a direct result of the greater instructive tendency which situated such families inside higher pay bunches where they can manage the cost of the expense of building household toilet facilities.

Further research also showed that while open stool will be polished by the uninformed, the reverse can also occur. As the JMP report shows, there is an inverse association between open defecation practices and school status. As a result, the number of people who practice open defecation continues to decrease with increasing school qualifications. There is, be that as it may, a uniqueness in nations like Cambodia, Ethiopia. As per the report, around 34% of the open defecators had accomplished

[105] Briceno, B., Coville, A., & Martinez, S. *Promoting handwashing and sanitation evidence from a large-scale randomized trial in rural Tanzania*. World Bank Policy Research Working Paper Vol. 7, Washington, (2015), 105,

[106] Osumanu, I. K., Kosoe, E. A., & Ategeeng, F. *Determinants of open defecation in the Wa Municipality of Ghana: empirical findings highlighting socio-cultural and economic dynamics among households*. Journal of environmental and public health 2019.

optional schooling status. For example, Ethiopia had 9% of its open defecators trained to tertiary or college level.

2.8.3 Household size.

Household size is an important factor that influences household toilet adoption. However, the level of influence depends on the size of the household. A study in India by Augsburg[107]indicated that larger households would be more likely to own or construct a household toilet facility. According to the authors, larger household size means higher demand and usage of a toilet facility in a household. Earlier before, a study in the Amhara District of Ethiopia by O'loughlin established a similar relationship.

According to O'loughlin for a household that does not have a toilet facility, those with larger household sizes of more than five members were more likely to adopt or use a toilet facility than smaller household sizes of less than five members[108]. However, other studies have also established that household size as a driver of toilet adoption and open defecation does not hold in all circumstances. A study in rural India concurred that a larger household is a barrier or constraint for not owning a latrine. The authors explained that larger family sizes are always faced with limited resources. A similar study was replicated in Wa, Ghana, by Osumanu[109] Findings from their research showed that the size of a household determined the practice of open

[107] Augsburg, B., & Rodríguez-Lesmes, P. *Sanitation dynamics: toilet acquisition and its economic and social implications* Vol. 15 (2015).

[108] O'Loughlin, R., Fentie, G., Flannery, B., & Emerson, P.M, *Follow-up of a low-cost latrine promotion programme in one district of Amhara*, Ethiopia: characteristics of early adopters and non-adopters. *Trop. Med. Int. Health* 11, (2006). 1406–1415. http://dx. doi.org/10.1111/j. 1365-3156.2006.01689.

[109] Osumanu, I. K., Kosoe, E. A., & Ategeeng, F. *Determinants of open defecation in the Wa Municipality of Ghana*: empirical findings highlighting socio-cultural and economic dynamics among households. *Journal of environmental and public health*, (2019).

defecation. According to the authors, larger household sizes are 40 per cent more likely to defecate in the open than those with smaller sizes. According to the authors, households of more than nine members are likely to practice open defecation. The authors asserted that heads of such households perceived the costs of building toilet facilities as high. It can therefore, be inferred that leaders of larger household sizes may be burdened with the need to cater for basic needs of all members of the household. This may therefore, reduce their capacity to construct toilet facilities at home. Landlord-tenant relations in Ghana can also explain this inference. In Ghana, it is expected that landlords who rent their apartments to tenants, will also provide household toilet facilities and other basic household facilities[110].

2.8.4 Religion and cultural barriers.

Open defecation samples in DR Congo show incongruities depending on the religion of the head of the family. The mainstream animist religious people of the DRC will generally be required to practice more openly than individual Christians, Muslims and other construed religions. Allan emphasized that open defecation in the nation is related to belief frameworks, with 30% of families led by animist adherents practicing open defecation, while 9% of families led by Jehovah's Witnesses additionally practice open defecation practice. In addition, strong beliefs about the area of a latrine office also influence office use. In Islamic countries, building or setting up a latrine office in the northern corner of the local area is illegal as it is against the value of Islam since

[110] Osumanu, I. K., Kosoe, E. A., & Ategeeng, F. *Determinants of open defecation in the Wa Municipality of Ghana*: empirical findings highlighting socio-cultural and economic dynamics among households. *Journal of environmental and public health,* 2019.

the toilet faeces in Mecca. These beliefs were also confirmed by Allan among Muslims in Bangladesh.[111]

A review directed by Nawab[112] on social biases in planning latrine offices in the North West Province of Pakistan showed that Islamic acts of bum-centric cleaning and strict nocontact with urine and excrement have led them to hesitate to use latrines that pee differently. The creators underlined that a large part of the Islamic nation in the region prefers flush toilets, while respecting other types of latrine as antiquated and untouchable. According to the developers, there was a fondness for toilet latrines, as they immediately deduce the excrement from their current situation.

Their decision is also attributed to the way that they could also perform ablution after defecation.[113] The equivalent can be said to describe the Hindu station setting, where the treatment of human excrement and the removal of human excrement is a distinct occupation for the untouchables. Besides, it also tries to pollute the excretions in the toilet pit inside the premises and considered rude for the altar where they love at home. Individual cleanliness as a private and bodily virtue, for example, is the focus of the Calcutta's of India, but they are not interested in ecological disorder. If the waste is outside the actual confines of the house, it has a place for them in the public domain.

A study by Nawab uncovered that in Zambia, explicitly in networks, for example, Choma, Lundazi and Lufwanyama, socially established restrictions have exacerbated

[111] Allan, S. C. *The Water Aid Bangladesh/VERC 100% sanitation approach: cost, motivation and sustainability*. Public Health for Developing Countries, (*London* School of Hygiene and Tropical Medicine, 2003).

[112] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals*. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City. 2006), 1252–55.

[113] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals*. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City. 2006): 1252–55.

open poop rehearses [114]. Lawrence observed that in such communities, there is a long-standing taboo that people should never use the same toilets as their in-laws, members of the opposite sex, or with different generations within a family[115] . Lawrence hypothesized that such social beliefs had tested behavioural changes in such networks. In addition, the impact of social elements was also confirmed in a four-nation review in Africa by Dittmer. The author found that in Burkina Faso, within the Bwaba ethnic congregations, one should respond to a rancher or a food delivery man by defecating at the food delivery man's ranch to treat the crops and the land.

The Idomas of Nigeria and the Malians considered open defecation a genealogical practice. The auther noted that these individuals accepted that open defecation is a way to accommodate and keep up with their hereditary practices. Subsequently, and according to the attitude to life, the Idomas are asked to open the turd, especially the more experienced individuals who considered pooing inside buildings (encase office) to be untouchable. Moreover, in Uganda, a study by Dittmer affirmed that because of the proper area of latrine offices, many individuals were reluctant to utilize these offices[116] .The author placed that the non-usage is a result of a social conviction that, the proper area will give simple admittance to their excreta by magicians for wicked purposes. It is accepted of profound defilement when one's dung interact with someone else's excrement. Subsequently, defecating transparently in hedges, seashores, and other open spaces are liked to latrine office use. It can, in this manner, be derived that

[114] Nawab, S. H., Wotiz R. P., & De Luca, C. J. Multi-Receiver precision decomposition of indwelling EMG signals. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City 2006): 1252–55.

[115] Lawrence, J. J., Yeboah-Antwi, K., Biemba, G., Ram, P. K., Osbert, N., Sabin, L. L., & Hamer, D. H. Beliefs, behaviors, and perceptions of community-led total sanitation and their relation to improved sanitation in rural Zambia. *The American journal of tropical medicine and hygiene*, *94*(3), (2016), 553-562.

[116] Dittmer, A. Towards Total Sanitation: *Socio-cultural barriers and triggers to Total Sanitation in West Africa*. Water Aid Report, (2009).

individual's defecatory inclinations and practices are subject to their own social and strict focal points We should not also dispute the fact that the dangers we cause to our immediate environment tend to accumulate risks which, with time, will affect the said community in general.

2.9 Community Perceptions of Smell and Defecation Practices

As per Rheinlander awful stench from human waste has been distinguished overall as addressing a significant boundary to the take-up of disinfection with some friendly, spirit, stylish and infection related concerns[117]. The enduring conviction that awful stench causes illnesses has filled in as a hindrance in the advancement of family latrines particularly in emerging nations including Ghana. In Niger and Malawi, 25% of toilet owners considered the horrific stench of human dung as a deterrent to the introduction of Grimason latrines.[118] According to Diallo smell subsequently assumes a critical part in impacting disinfection conduct across societies and financial separation thus ought to be thought about in future sterilization mediations[119].

2.9.1 Perceptions of Contagion and Risk of Infection

Community perception of contagion also influences sanitation and defecatory behaviour. Pollution helps in situating contagiousness or pollution in the light of disease causation. For example, bodily essences such as blood, pus, and female bodily fluids such as menstrual blood and vaginal fluids are commonly perceived as potent

[117] Rheinlander, T., Keraita, B., Konradsen, F., Samuelsen, H., & Dalsgaard, A. *Smell: an overlooked fact in sanitation promotion*. Waterlines, 32 (2), (2013): 105 - 112

[118] Grimason, A. M., Davison, K., Kafwe, C., Tembo, G., Jabu, C., & Jackson, M. H. "*Problems associated with the use of pit latrines in Blantyre*, Republic of Low-Cost Sanitation: an Overview of Available Methods: 67 Malawi." Journal of the Royal Society of Health 120(3), (2000): 175– 82.

[119] Diallo, M.O., et al., *Household latrine use, maintenance and acceptability in rural Zinder, Niger*. Int J Environ Health Res, 17(6), (2007): 443-52.

and dangerous in many parts of Africa. Such diseases that are related to digestion, which could be urine or faeces tend to be seen as pollution illnesses[120].

As indicated by Carroll, the belief held in the earlier frames of medication was that one infection could pass into another or present itself differently in different individuals. Diseases cannot be traced back to the work of an infection specialist on the human body, but rather the result of individual susceptibilities and individual cooperation with the climate, all other things being equal. So not every human being was defenseless against diseases; It was believed that certain individuals had to prove themselves ill than others[121].

2.9.2 Perceptions of Contagion effects on economies

Beyond the human waste and suffering, the global deficit in water and sanitation is undermining prosperity and retarding economic growth.[122] Poor sanitation has many actual or potential negative effects on populations in a country. Productivity losses linked to that deficit are blunting the efforts of millions of the world's poorest people to work their way out of poverty and holding back whole countries. According to the human development report (2006); the overall costs of the current deficit total $170 billion or 2.6% of developing country GDP. Costs for Sub-Saharan Africa total $23.5 billion, or 5% of GDP—a figure that exceeds total flows of aid and debt relief in 2003. But the irony is that, achieving the Millennium Development Goal target of halving

[120] Douglas, M. *Purity and danger. An analysis of the concept of pollution and taboo*. (New York, NY: Routledge Classics 2002).

[121] Carroll, R. E. *Improving medication adherence in stroke survivor.* (Clinical trials 2014).

[122] Green, E. C. Indigenous theories of contagious disease. (Oxford, UK: Ata Mira Press, 1999).

the proportion of people without access to water and sanitation would cost about $10 billion annually for low-cost, sustainable technology.[123]

As indicated by World Health Organization[124] for every 10% increase in female productivity (due to expanded school participation where there are legitimate sterilization offices), a country's economy can grow by 0.3 percent. Achieving the MDG for disinfection_would result in $66 billion earned through time, efficiency, distracted illness and death, and well-being costs. Likewise, a 10-year expansion in normal future upon entering the world converts into an ascent of 0.3-0.4% in monetary development each year.

2.9.3 Perceptions of Contagion effects on environment

In places where an enormous portion of the population does not have satisfactory water supplies and sanitation, effluents flow directly into streams, waterways, lakes and wetlands, affecting riparian and marine biological systems and polluting the climate.[125]

Evolved sanitation reduces natural weight, expands maintainability of ecological assets, and considers a better and safer future for children.[126] The most visible impact of heavy litter on style is the way litter creates odor and visual appearance of the

[123] King, R., Inkoomi, D., & Abrampah, K.M. Urban governance in Kumasi: poverty and exclusion', *Urban Governance, Partnership and Poverty Working Paper*, (University of Birmingham IDD May 2001)

[124] WHO & UNICEF. Progress on drinking water and sanitation: USA: Joint Monitoring Programme for Water Supply and Sanitation. (2008).

[125] United Nation-UN. *With Help From Sesame Street, UN Urges Partners To Break Silence On Open Defecation*. (2014): [online] Available at: https://news.un.org/en/story/2014/05/469442-help-sesame-streetun-urges-partnersbreak-silence-open-defecation [Accessed 12 November 2019].

[126] United Nation-UN. *With Help From Sesame Street, UN Urges Partners To Break Silence On Open Defecation*. (2014): [online] Available at: https://news.un.org/en/story/2014/05/469442-help-sesame-streetun-urges-partnersbreak-silence-open-defecation [Accessed 12 November 2019].

climate, particularly in cities and urban communities. In many emerging market cities and urban areas, household waste is generally disposed of in front of houses, on sidewalks, or sometimes in open countryside. This contaminated air quality makes unwelcome air for nearby families as well as hikers, travelers and tourists passing by the places. Beside household solid waste, the management of waste at most marketplaces has been very poor.

2.10 Public education about the importance of sanitation.

It is important to ensure that well-being data is accessible in broad daylight. Such data should be presented in an appealing, straightforward and concise manner. Where it fits, huge banners with brilliant tones and selected messages all around, set up in clear places, are powerful. These messages should include promoting handwashing, using litter bins, maintaining toilet facilities, and ensuring water supplies.[127]

2.11 Conducting a sanitation and open defecation survey

To help answer the question of the magnitude of the sanitation, hygiene and open defecation crisis, household surveys and censuses are conducted to assess drinking-water sanitation, hygiene and open defecation practices at the household level. Household surveys make use of quantitative and qualitative data to arrive at conclusions which considers access to sanitation supply latrine and whether these facilities can be categorized as improved or unimproved.[128]

[127] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation (2008).

[128] WHO & UNICEF. *Progress on drinking water and sanitation*: USA: Joint Monitoring Programme for Water Supply and Sanitation (2008).

2.12 Chapter Conclusion

This chapter has reviewed all the relevant literature that is important to the study, has also defined the various terms and concepts used and placed them in the proper perspective for a thorough understanding of the study. The literature review includes the global impact of sanitation and its implication, sanitation and open defecation situation in Ghana and factors influencing sanitation preference etc. Concepts like religion and cultural barriers, dirt, contagion and risk of infection and attitudinal argument among others were thoroughly discussed. The insight gained from the literature review has contributed immensely to the discussion of the data and the findings of this study and has also helped to build bridges with other studies.

CHAPTER THREE

THEOLOGICAL REFLECTION ON OPEN DEFECATION

3.0 Introduction

This chapter Present Gshana's population on religion, religious world view of the environment and examines the theological reflection on open defecation within the three main dominant religions in Ghana; that is Traditional, Islamic and Christianity, and contemporary application of the text.

3.1 Ghana's Population on Religion.

The population of Ghana is estimated at 32,395,454,[129] according to the 2021 Population and Housing Census. According to a survey conducted, traditional religions make up 6.2% of the total population, Christians including Catholics, Baptists, Protestants, etc. make up 71.2% of the total population, 17.6% are Muslims. However, no mention is made of the number of remaining people in a country that did not belong to any religion or belonged to an unknown religion. Therefore, religion pervades every aspect of Ghanaian society, and since these various denominations are strong advocates of hygiene, almost everything, including hygiene, depends on it.

Africans are known for their religious beliefs, and Ghanaians are no exception. It is crucial to investigate how people's attitudes on sanitation are influenced by their freedom of association with a particular faith. In these communities, most of the residents are people of faith. It is therefore important to note that the community`s development depends very much on its ability to live up to its religious standards. So

[129] Ghana Demographics Profile 2021".http://www.indexmundi.com/ghana/demographicsprofile. Accessed June 30, 2015.

religion is important for development and development is also important for religion. Therefore, it is important to encourage open exit dialogue.

3.2 Peoples world view on the environment

Open defecation is one of the environmental challenges the world is facing. It is therefore important to look at people world view on the environment in order to better understand the theological response on open defecation. What really influences people's treatment of the environment is their world view. According to Norman L. Geisler, there are at least three world view of the environment One, Atheists world view, two, Pantheists' world view and three, Christian world view.[130] The atheist or materialistic like Any Rand exalt the virtues of technology over nature and show little concern for the natural environment. The pantheists on the other hand worship nature. They oppose drilling for oil off shore, building dams, killing animals for interventions that disturb the natural environment. Christian are between these two extremes. That is the materialistic consumption, or excess use of nature and the Pantheist's veneration of nature against human life. Christian on the other hand believes in the proper respect for and use of natural resources that has been entrusted by God.

3.3 African Traditionalist on Open Defecation.

In Ghana's traditional environment, there are taboos that dominate all aspects of indigenous lives. Such measures are being implemented to protect the general well-being of individuals and the environment as a whole, including all aspects of an individual's life.

[130] Norman L. Geisler, *Christian Ethics Options and Issues*, (Baker Academic, USA, 1989), 293 – 310.

The world view of African Traditional Religion seems to agree with or support pantheist's worldview of the environment. ATR believe in a host of spirit beings, with God as the Supreme, or controller and sustainer of the world.[131] They believed that many of these spiritual beings inhabit objects like rocks, mountains, caves, trees, rivers, etc. Belief in uncertainties and insecurity of human beings is also associated with ATR, and this makes them lean on something that can help and grant them security and for that reason maintain harmonious relationship with the spiritual world by treating these natural objects with some form of reverence.

The earth or the land is metaphorically called Asase Yaa, (that is Thursday born of a female) and being a human must be treated with respect. Defecating in unauthorized place is a taboo that is desecrating the land or the sacred object of that place, especially in rivers and near river banks or openly defecating in a bush. The people's world view indeed forms part of their sanitary preference as noted by Nawab.[132] Douglas also maintains that people settle on their defecatory preferences and rituals by looking at life from their own cultural and religious lenses[133] and this is precisely with the ATR. ATR believes that human beings have a responsibility to conserve the world which is God's creation, hence among the duties of chiefs is to ensure the forest in their area are not depleted anyhow, and every member is oblige to protect and conserve the universe for secular, religious and future reasons.

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[131] Afful, K., Oduro-Kwarteng, S., and Awuah, E. *Assessing public perception of Odours in a community*: Case of Ayigya Zongo, an Urban Poor Community in Ghana. Journal of Water, Sanitation and Hygiene for Development, 5, (2015) 244-251. http://dx.doi.org/10.2166/washdev.2015.104

[132] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals*. Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City, 2006), 1252–55.

[133] Douglas, M., & Wilddavsky, A. *Risk and culture: An essay on the selection of technological and environmental dangers*. Berkeley: (University of California Press 1982).

According to Donkoh Adu-Gyamfi, the ultimate authority in the traditional environment lies with the indigenous priest healers, also known as priests. As a connection between the gods and humans, "his ministry was as effective as the pope and imam ministry" could not be blamed for being true in itself. This, in turn, shows the power the priest has over people by judging the problems that have been placed before him. It raises the following questions: "Who was responsible for people's physical needs, and what steps were taken to ensure proper hygiene? Indigenous peoples to keep the environment clean are there any laws or penalties to guarantee? Physical needs in this context are people's health and well-being. It is believed that adhering to or observance of the taboos, helps the people to keep the environment clean to prevent disease and sickness and also attract the blessings of the gods of the area.

3.4 Islamic Perspective on Open Defecation

In Islam, hygiene involves keeping the body and its surroundings clean. Washing is the main indicator of a clean look. This is the result of the belief that the seats of the body need to be washed through the outer parts of the body that are frequently washed and disinfected daily according to Islamic law orders. The Quran says this in chapter 2, verse 222:

For Muslims, cleanliness is part of their belief. Therefore, it is not surprising that some facilities such as toilets, bathrooms and excellent sewers can be found in different Islamic communities. Unfortunately, this is not really the case in Islamic communities such as Aboabo, Asawase, and Aboabo Extension. Many homes have no amenities, bathrooms are annoying, and there are virtually no waste disposal stations or locations.

The suggestion that the location of a toilet facility also influences the use of the facility, i.e. constructing or erecting a toilet facility in the northern corner of the community is unacceptable as this goes against the value of Islam since the latrine faces towards the east. Defecating by not having your back towards qibla is done both indoors and outdoors. This is according to the Prophet's command, he said ,*"If you want to defecate, do not face and have your back towards qibla. However, face to the east or the west."* [134]

but not in any of the study areas. Because the communities considered for the study are predominantly Muslim, we often discuss the role of sanitation in religion.

The usual notion of cleanliness, alongside piety, is consistent with the teachings of the Prophet Muhammad who encouraged his followers to keep their surroundings clean and maintain good personal hygiene. "we have sent among you a messenger from yourself reciting to you our verses and purifying you and teaching you the book and wisdom and teaching you that which you did not know" (Quran 2:151) When communities see the effects of open defecation, they fear that they are offending God by not abiding by the Prophet's teachings and feel a sense of shame at realizing they are worshiping in an unclean environment. Many Islamic people have strong beliefs in the readings of the Qur'an. Quoting verses like God loves those who keep themselves clean (2:222); God loves those who purify themselves (9:109) and purity is half of faith; It fills the scales of good deeds. Such utterances of Allah is effective in getting people to recognize and speak out about the evil of open defecation and how it defiles their ablutions and prayers. Moderators have also emphasized that the teachings of the prophet state that women should clean their genitals with pure water

[134] Hadith Abu Ayyub, al-Anshari *radhiyallahu 'anhu*,

(not contaminated by feaces or urine). Women take this issue very seriously and it helps them do the right thing. It is also believed that one should not defecate near the mosque or church as it offends God.

3.5 Christian Perspective on Open Defecation.

The practice of Christianity is evident almost everywhere in Ghana, from clothing to boarding commercial vehicles commonly known as "trotro". According to Proverbs 3: 6, "In all your ways acknowledge him, and he will make your paths straight.[135] Christians in Ghana literally apply this principle to their lives.

In Leviticus, God stipulated some legal and moral practices for the Israelites. Chapter 14: 8 says, "The one who is cleansed must wash his clothes, shave all his hair, and bath with water, then he will be ceremonially clean. After this he may come into the camp, but he must stay outside his tent for 7 days." [136]

The entire chapter devotes itself to the treatment of leprosy.[137] Other laws enacted cover virtually every aspect of human life, from dealing with illness to personal hygiene and the environment, proving the fact that God pays close attention to personal hygiene.

The Christian ecology flows out of the theology that God is the divine owner of the environment and human being are stewards, according to Genesis 1:28. The human being therefore has at least three basic obligations to the environment. One to multiply and fulfill it, two to subdue and rule over it, and three to Work and take care of it. "God blessed them and said to them: be fruitful, prosper, fill the earth, and conquer it.

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[135] Holy Bible. *New International version*, prov 3:6

[136] Holy Bible. *New International Version*, leviticus 14:8

[137] ibid Donald G. King, "*Religion and Health Relationships: A Review*". Journal of Religion and Health, Vol29 n0. 2 summer, 1990, Springer Accessed on (November 27 2015): 101-112. http://www.jstor.org/ stable/27506057.

Dominate sea fish, birds in the sky, and all creatures that move around the globe.[138] Human being therefore has a responsibility to the environment which flows out or based on their knowledge of God, their creator.

The Christian responsibility to the environment is not just to procreate, nor subdue it in the negative sense, but rather to manage the environment. The power human being have over nature, makes them stewards, that is to work and care for the environment. The Christian responsibility is a balanced one, the procreating must be in proportion to the control and care taking of the environment God has entrusted. God has indeed entrusted the earth and it resources to our care. It is in this sense that laws are given concerning our relationship with the environment, such as Sabbath, law of warfare,(Deut 20:19 – 20), the law against land greed,(Isaiah 5:8), the laws of sanitation; laws for cleaning food, hand and utensils washing, quarantines for those with infectious diseases, infected clothing had to be incinerated, infected houses were to be destroyed,(Lev 13 – 14); human waste products had to be buried in the ground (Deut 23:13) "Our power over nature does not give us the right to pollute nature. On the contrary, Christians have a responsibility to cherish and protect the natural world[139] Open defecation therefore is pollution and abuse of the environment and must be stopped.

Awuah – Nyamekye, quoting Opoku Ankomah stated that, "culturally acceptable environmental management among Africans emanates from social organization that is permeated by spirituality and a revence for ancestors"[140] Africa Christians therefore should not have a problem at all with regards to respecting God and saving the

[138] New International Version, *Genesis 1:28*, AMG Publishers, US, 1996, 4.

[139] Norman L. Geisler, *Christian Ethics Options and Issues*, (Baker Academic, USA, 1989), 309.

[140] Samuel Awuah – Nyamekye, *Managing the Environmental Crisis in Ghana The Role of African Tridítional Religion and Culture with Special Reference to the Berekum Traditional Area*, (Cambridge Scholars Publishing, UK, 2014), 90.

environment. Both their Christian and traditional backgrounds make it expressly clear that the human being does not own the earth, and that they are duty bound to maintain the environment for generations unborn. The war against open defecation as a way of environmental protection mechanism must be fought by every Ghanaians.

Open defecation takes various forms, and all form part of environmental pollution. Apart from openly defecating into open gutters, and some parents allowing their children to defecate on the ground as observed in the study area, disposal of used diapers by children, adults who are bedridden faecal and those who defecate into rubber bags in the night or during raining all end up becoming open defecation in a sense that they are deposited at the various refuse dumps, and goats, sheep and pigs tear them apart and there by pollute the environment.

"The Lord your God (YAHWEH) moves about in your camp to protect you and to deliver your enemies to you",(Deuteronomy 23:14a)[141] the above quotation metaphorically makes or describe God's position among the soldiers as the commander – in – chief. For the Israelite to win the war against their enemies depends on their obedience to their commander – in – chief. This is because the commander-in - chief has a general oversight responsibility not only over the soldiers at the battle field, but over the entire military camp and all other activities within the camp, (environment) Our victory over the fight against open defecation also depends on our obedient to and strictly following the instruction of the commander - in - chief (God). Prevention of open defecation has received attention of a lot of theologians, using Deuteronomy23:12 – 14. In dealing with the text, there are at least two school of thoughts; those who believe that the law was for hygiene and health as one of the

[141] Holy Bible, *New International Version*. Deuteronomy 23:14

reason for the pentateuchal law on sanitation and those who focus on theological significance that bothers on defilation which is infringement on the holiness of God. Bruckner is among those who discusses the hygiene and health of the text. In his book, *No Open Defecation* Yamoan[142] goes further in discussing reasons for the injunction or the law against open defecation looking at socio cultural, environmental cleanliness, good stewardship over creation, and holiness of God among others.

In as much as I agree with the above mentioned scholars, I will like to go a step further to look at the respect for God and love for self and others in keeping with the law and the contemporary relevant of the text. The concluding part of the text read, "Your camp will be holy, as the Lord your God will walk in the middle of your camp to save you and abandon your enemies before you." One can therefore infer that aside the hygiene and health aspect or implications on the people God also is much concerned about his holiness and how his people respect him and as a result desist from indecency. Therefore, the excreta is not good for human health only but equally shows an act which is scandalous or disgusting to be left uncovered to be seen by someone, most especially one's superior. For open defecation to be offensive or shocking to God means God is not at peace with it and people who practice it, which is why he will turn away from them.

Open defecation was therefore a challenge to God in his relationship with his people, live on the wilderness, without permanent structure, chances of practicing Open Defecation was too high. God identified the challenge and also proposed a solution which is in verse 13, "You must have a trowel with tools, and when you sit outside you will dig a hole in it and look back to cover your excrement." This instruction gives

[142] Yamoah James, *No open defecation*, (classic graphics, Kumasi 2019), 5-14.

a responsibility to the leaders and the members as well. The determinant of the place outside the camp and the provision of the tools is leadership responsibility and hole digging for excrement and covering is the individual member's responsibility; refusal on the part on any of them will constitute disobedience.

Following scholarly discussion on the text, what comes to light is that the law served two purposes: to maintain the health of the people and to maintain the purity of the camp as a place of God's residence. This is because some diseases can make someone unholy, therefore God will not prescribe such a practice for his people, if it would be detrimental to their health and existence.

The responsibility of the Church is not only to remind everyone of their duty to cherish nature, but above all to protect humanity from self-destruction[143] .This is consistent with the third objective of the study. The churches therefore need to embark on educating members to understand the need for owning toilet facilities in the houses and stop putting up houses without any toilet facility.

3.5.1 Contemporary application of the text

Unlike the camp of the biblical people (Israelites), contemporary military camps are very sanitary and hardly will you find open defecation, the practice is more in our communities, even though well-structured and developed than that of the Israelites on the wilderness and are permanent abode which require proper sanitation facilities and services, in that open defecation will not be practiced. If people who were living on the wilderness were asked not to practice open defecation, what will be demand of us? The instruction in verse 12-13, was temporary for prevention of open defecation in the wilderness. That is not required of us, rather permanent toilet is what is required. The

[143] Pope Francis. *laudato Si' On Care for our Common Home* (Encyclical 2015)

causes for open defecation have already been discussed. The most rudiment of it all is disobedient on both parts that is failure of leadership and citizenry.

Contemporary, we are not expecting God to walk in the midst of our camp (community), to deliver us and to give up our enemies before us, which is why our camp must be holy. But keeping a sanitary environment or condition prevent us from getting diseases. The enemy therefore can be equated to diseases caused by open defecation. Open defecation therefore is a challenge to our health as individuals and as a community. Our relationship with God on the other hand also depends largely on our health status. It is when we are healthy that we can relate well with God and serve him as we ought. It is imperative therefore that what is a challenge to our health is also a challenge to our relationship with our God. Respecting God by keeping the law of open defecation free community therefore fosters our relationship with God in that the healthier we are the more we are able to attend to our religious responsibility and by so doing we grow in our relationship with God.

Love for self and others: knowing the harmful effect of open defecation and equating it to the enemy simply means that the one who practice open defecation is an enemy to one, self in that the practice will tend to harm him or herself, two, not only him or herself but also other members of the household or community. Sometimes the one who practice, is not affected but others, and three, God because the act is against his will. Practicing or creating open – defecation- free- community therefore does become our social responsibility in promoting healthy lifestyle, preventing diseases and contagion. The church therefore has to educate landlords in the community without household toilet to understand that it is against God's command to build a house without toilet in order to reduce the deficit in household toilet in the study area.

3.5.2 Chapter Conclusion

The chapter has looked at Ghana's population on religion and people's world view on the environment and how it influences their interaction with the environment. It has also looked at the responses to open defecation within African traditional religions, Islam and Christianity and the contemporary application of the text. After all considerations, the chapter concludes that people's beliefs and world view have a greater influence on open defecation.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

4.0 Introduction

This chapter defines the methods and techniques adopted for data collection for this project and includes: the study area, research design, sampling methods, data collection methods. Pre-tests of research instruments were also examined to ensure the accuracy of the research results.

The chapter also discusses, presents and analyses data based on the socio-demographic characteristics of respondents. Analysis and discussion of data is done in accordance with the objective of the study. Assess Household toilet and in addition to public latrine, effect of open defecation, performance measurement reliability analysis on the questionnaire instrument; evaluation some assumption on sanitation and defecatory practices and then interpretations and discussions of findings.

4.1 Profile of the Asokore Mampong Municipality

Asokore Mampong Municipal Area is one of the municipalities in the Ashanti Region of Ghana, and Kumasi is the capital located in the Transitional Forest Zone some 270 km north of the state capital Accra. Define covers a total area of 254 square kilometers, stretching between latitude 6.35o 6.40o and longitude 1.30o 1.35o, with an altitude between 250 and 300 meters above sea level, with Kwabre District to the north, Ejisu Juabeng District to the east, Atwima Nwabiagya District to the west, and Bosomtwe Atwima Kwanwoma District to the south form the borders of Kumasi. The average minimum temperature is around 21.5 degrees Celsius, and the average maximum

temperature is around 30.7 degrees Celsius. The city receives a total of 214.3 mm of rain in June and 165.2 mm in September.[144]

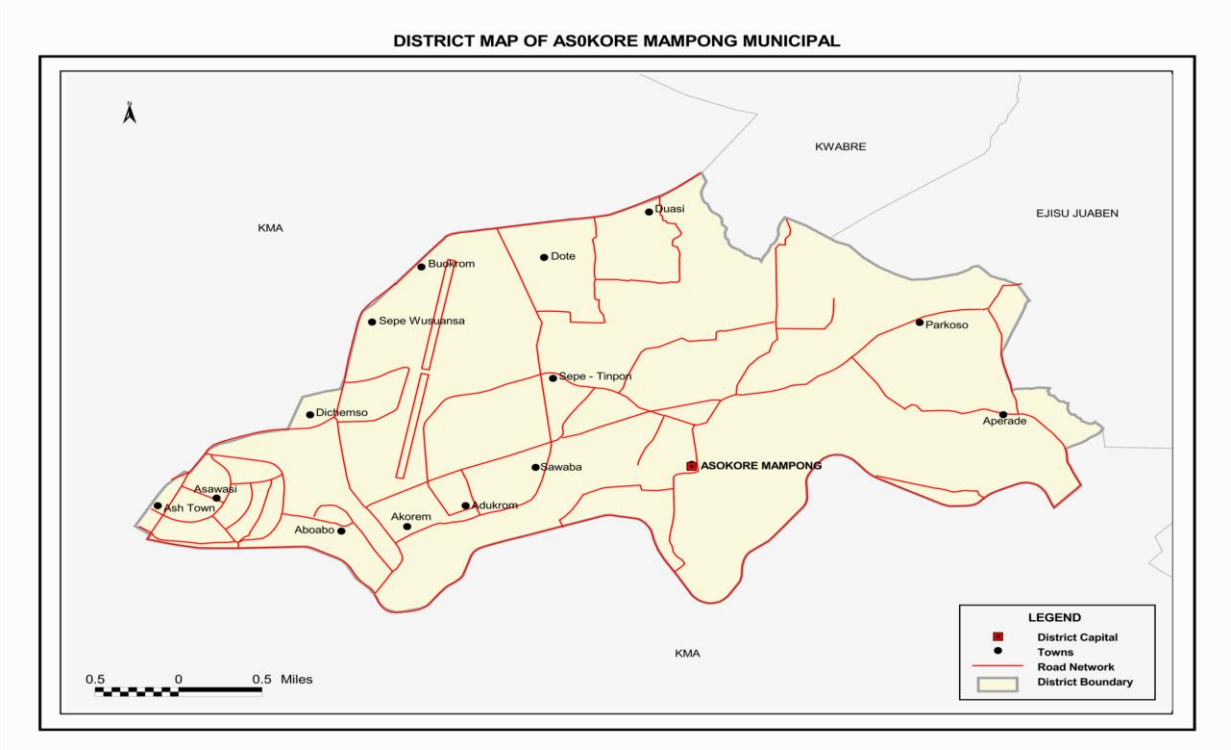

Figure 4.1: District Map of Asokore Mampong Municipal

Source: Town and Country Planning Department, 2021

Although a small land size, the Municipality according to the 2021 Population and Housing Census stands at 191,402 with 10 electoral areas namely; Aboabo No. 1, Aboabo No. 2, Adukrom, Akurem, Asokore Mampong, Sawaba, Asawasi, New Zongo, Sepe-Tinpom and Akwatialine Electoral Areas with 93,506 males 97,896 females[145]. (See Figure 4.1).

[144] GSS (Ghana Statistical Service), *Population and Housing Census*: Summary Report of Final Results, GSS, Accra, Ghana, 2021.

[145] GSS (Ghana Statistical Service), *Population and Housing Census*: Summary Report of Final Results, GSS, Accra, Ghana, 2021.

4.2 Research Design

A research design is a blueprint of the methods and procedures that will be used by researchers to collect and analyze data.[146] The study adopted the mixed method research design. This was employed to identify responses on open defecation in Asokore Mampong Municipality. The rationale for using the mixed-method design was to obtain a variety of information in order to achieve higher levels of data validity and reliability, and to overcome the shortcomings of single-method studies.[147]

The study uses the Interpretation Phenomenological Analysis (IPA) method in analyzing the data collected. This is an approach or tradition that interprets and reinforces the lived experience stories of research participants; however, for these stories to be interpretively meaningful, the story researcher must have a true and deeper understanding of the participant.[148] Using this method enables the researcher to side-line his biases and objectively source data from credible people and make analysis of it.

The mixed method research is a technique and procedure for collecting, interpreting, and extracting both qualitative and quantitative data, considering the need and sequencing of data. This approach is used in research to identify existing toilet facilities in the community.[149]

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[146] GSS (Ghana Statistical Service*), Population and Housing Census: Summary Report of Final Results*, GSS, Accra, Ghana, 2021.

[147] J. Green and V. Caracelli, "*Toward a conceptual framework for mixed method*," *Educational Evolution and Policy Analysis*, vol. 11, no. 3, (1989): 255–274,

[148] Jonathan A. Smith. *Interpretative Phenomenological Analysis*. (Birkbeck university of London, uk 2021)

[149] Creswell, J W., & Plano Clark, V. L. *Designing and conducting Mixed Method Research* (3rd ed). (Saga Publication 2018).

4.3 Sources of Data

The data for this study were obtained from both primary and secondary sources. Secondary data includes sanitation and open defecation statistics, as well as information from Municipal Assemblies and environmental protection agencies. Books, articles, journals, and reports are other secondary data sources. Focus group discussion and interviews were used to gather primary data from the field.

4.4 Target Population

The target population can be defined as "the whole accumulation of respondents that meet the assigned arrangement of criteria[150] Researchers are interested in generalizing conclusions to groups of people or objects. The target population usually has different characteristics and is called the theoretical population. The target group for the study comes from five suburbs of town, thus Aboabo number 1, Aboabo number 2, Aboabo Extention and Asawase in the Asokore Mampong Municipality of Ashanti region. Each of these locations would provide a distinct population range and study. The above-mentioned communities were chosen based on racial, economic activity and religious characteristics of the area.

4.5 Sample and Sampling techniques

Sample is considered the proportion of the population of a study from which data is collected for analysis. According to Saunders[151] it is the subset, or part of a larger population, that is being studied. He points out that data for the entire population

[150] Burns, N., & Grove, S. K. T*he Practice of Research Population* (1997).
[151] Saunders, M. L., & Lewis, P. *Research Methods for Business Students*, *4 ed*. (2004).

would not necessarily provide more useful results than collecting data from a sample representing the entire population.

Both probability and non-probability sampling methods were used to draw the sample for the study. On the probability side, simple random sampling, systematic sampling, and cluster sampling have been adopted. The purposive sampling technique was used for the nonprobability technique. A systematic sampling technique was used to select respondents from the Aboabo number 1, Aboabo number 2, Aboabo Extension, and Asawase areas.

4.5.1 Simple Random Sampling Technique

Simple random sampling is a probability sampling technique that gives each item in the target population an equal and independent chance of being selected[152] .The researcher used the simple random sampling technique to select respondents for the study. The techniques was used in the selection of 3 of the 15 communities within the five administrative zonal councils in the Asokore-Manpong Municipality and to choose housing units for questionnaire distribution to the various households.

Systematic random selection was performed. Interviewers systematically walked through the blocks in the selected communities interviewing heads of households of selected housing units or their representatives. In a multi-household, only one head of household was interviewed. This was done in a random manner without any form of bias and gives different respondents an equal chance of being selected. This sampling technique was used for convenience and helped accurately represent the population for the study.

[152] Trochim, W. M. Research methods*: The concise knowledge base*. (Atomic Dog Publishing, 2005).

4.5.2 Purposive Sampling

Purposive sampling is a sampling technique that is not based on probability, but the researcher intentionally selects people to enrol in a study based on the fact that those people have expert information that would be of immense use to the research and also do not mind being involved in the research. Purposive sampling was used because of the researchers' belief that these subjects were typically informed about the subject being studied.[153] The purposive sampling techniques (non-probability sampling), this is a sampling technique in which the sample is selected at the researcher's personal discretion and the researcher uses his or her discretion to select units appropriate to the research problem at hand. Those sample units directly responsible for administering sanitation facilities in the community, as well as heads of recognized religious and traditional institutions, were chosen through purposive sampling. The study's core informants were people who fit within these criteria. Asokore Mampong Municipal Environmental Health and Sanitation Officer, Ghana Health Service Municipal Disease Control Officer, Regional/Municipal Director of Municipal Water and Sanitation Authority, two public toilet attendants, a Christian leader, a Muslim leader, and a traditional leader were among the eight key informants.

4.5.3 Sample Size Estimation

The number of households in all selected communities (N = 6,626) was taken from the Ghana Statistics Service and used in the survey. Yamane's formula[154]. To determine the sample size, the formula for determining the sample size was used. n = N / (1 + N () 2), where n = sample size, N = sampling frame, and the margin of error

[153] Creswell, J.W. Research Design*: qualitative, quantitative and mixed method approaches 4th ed.* (2014).

[154] T. Yamane, Statistics: *An Introductory Analysis, 2nd edition* (Haper and Row, New York, NY, USA, 1967).

estimated to be 0.05. This resulted in a total of 377 household samples. The allocation of sample size to each community was influenced by the number of households in each community to achieve the representation. Simple proportions were used to allocate selected communities for the study.

Therefore 377 respondents/heads of household were selected for the study.

4.6 Data Collection Instruments

Investigators follow respondents and contact respondents about interviews in their respective households. Face-to-face interviews begin with self-introduction and explanation of the purpose of the investigation, and the cooperation of several key figures on various investigation sites (members of Congress and members of the unit committee through district environmental health officers). This happens because some of the interviewees, especially women, may not want to be interviewed. The survey of respondents lasted just one month. After collecting the data, the researchers read all the questionnaires, make sure they are filled out correctly, and fix the gapped questionnaires so that they can answer the relevant questions and evaluate the results.

Questionnaires, interviews, and focus group discussions were used to gather information from respondents. A semi-structured questionnaire containing both closed and open-ended questions was used to collect information from household and household members, as well as individuals/respondents from the community. Interviews and focus group discussions were also used.

4.7 Intervention Results

Out of 400 questionnaires distributed to various household heads within Asokore Mampong Municipality, 350 questionnaires were retrieved for processing. The actual

number of respondents who answered the research questions was 350 out of 400 target subjects representing 87.5% of the sample population. This section also analyzed the socio-demographic profile of the respondents who took part in the study. Analysis of this survey was performed using frequencies, percentages, mean, standard deviation and measure of reliability (Cronbach's Alpha), where possible data has been presented in graphical form to illustrate trends to ensure a better comprehensive understanding of the research work.

4.8 Profile information

In this section, the characteristics of the household heads and key informants are presented in Tables 4.1.

Table 4.1: Respondents Demographic Characteristics

Variables		Frequency	%
Sex of Household Head	Male	227	64.9
	Female	123	35.1
Age of Household Head	20 – 29 Years	41	11.7
	30 – 39 Years	63	18.0
	40 – 49 Years	95	27.1
	50 – 59 Years	38	10.9
	60 – 69 Years	63	18.0
	70 – 79 Years	50	14.3
Respondent education	No formal education	125	35.7
	First cycle	113	32.3
	Second cycle	94	26.9
	Tertiary	18	5.1
Religious Affiliation	Christianity	137	39.1
	Islamic	207	59.1
	Traditional	6	1.7
Occupational Level	Farmer	12	3.4
	Casual laborer	35	10.0
	Public/Civil savant	23	6.6
	Trader	131	37.4
	Masonry	30	8.6
	Commercial Driver	50	14.3
	Housewife	44	12.6
	Pensioner	6	1.7

	Min	Max	Mean	SD
Household size	1.00	5.00	3.03	1.06
Household monthly income	100	500	200	0.87

Source: Field Study, 2021

As shown in Table 4.1, 227 respondents who were male made up 64.9% of the sample selected for this project. It was also observed that 123 respondents expressed as a percentage of 35.1% were female. The data therefore show that despite the larger number of men as heads of household during the survey, women appear to be at the

forefront of questions about hygiene and defecation practices. However, this means that the information on open defecation in Asokore Mampong Municipality was obtained from both male and female household heads of the sampled house/establishments, and therefore the results are not gender specific. The distribution can be seen in Table 4.1 above.

The age distribution of the respondents who took part in the project is shown. As shown in the Table, 41 of the respondents (11.7%) were under 30 years of age. Majority of respondents; 95, or 27.1%, were in the 40 to 49 age group. The results further show that 38 respondents, expressed as a percentage of 10.9%, were in the 50-59 age group. Those whose age appeared to be over 70 years were 50, accounting for 14.3%. The analysis show very active respondents due to their youthful nature. This also means that if the youthful nature of the household workforce is properly educated on open defecation, could effectively help address issues and challenges related to sanitation and open defecation in the community. It also shows that all respondents were mature enough to define their participation in the study. However, the perception and the attitude of the youth of the study area confirm Mehrotra, N and Patnail S.M.[155] Assertion regarding age long practice of open defecation and impossibility of stoppage as revealed in the literature review.

Again, respondents' level of education has an impact on respondents' ability to read and understand the issues raised in the questionnaire. When asked about the educational qualifications of the 350 participants, slightly less than half, namely 35.7% (n = 125), had no educational qualifications. The next highest frequency are those with

[155] Mehrotra, N. and Patnaik, S. M. *Agelong practice of open defecation*. Economic and Political Weekly Vol.43, No. 43, (2008)

[149] T. Yamane, Statistics: *An Introductory Analysis, 2nd edition* (Haper and Row, New York, NY, USA,1967).

first cycle education, accounting for 32.3% (n=113) of all respondents. While 26.9% (n=94) of the respondents were in second cycle education. Overall, 5.1% of respondents had a college degree or higher. This implies that respondents were able to read and fully understand all aspects of hygiene and open defecation practices addressed in the questionnaire.

4.9 The influence of socio-demographic dynamics of Aboabo people in the management of human waste at the community.

Table 4.3: Household Latrine: Result from observation check list (n = 350)

Is there a Latrine					
Yes				No	
Frequency	**Percent**			**Frequency**	**Percent**
123	35.1%			227	64.9%
Permanent Latrine		**Semi-Permanent Latrine**		**No Latrine**	
Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
97	27.7%	26	7.4%	227	64.9%
Items		**Yes**		**No**	
Indicators		**Frequency**	**Percent**	**Frequency**	**Percent**
Is the latrine functioning		120	34.2%	3	0.9%
Is there a hand washing facilities near the latrines		231	66.0%	119	34.0%
Does the latrine have available water for hand washing		280	80.0%	70	20.0%

Source: Field Study, 2021

The first objective of the study was to determine the influence of socio-demographic dynamic of Aboabo people in the management of human waste at the community level.

These communities comprise Aboabo number 1, Aboabo number 2, Aboabo Extention and Asawase. To meet this said objective, the data from the observation checklist was analyzed and tabulated as shown in Table 4.3.

It was observed that 123 (35.1%) of the sample size had latrine/toilet facilities while 227 (64.9%) did not have latrine/toilet facilities. Among the 123 households with latrines 97 (27.7%) had permanent latrines while 26 (7.4%) had semi-permanent latrine. It was further observed that 120 (34.2%) household had functioning latrines while whereas in 3 (0.9%) homes latrines were not functioning. Again, with respect to the availability of hand washing facilities near the latrine, it is observed that 231 (66.0%) of household latrines have hand washing facilities near the latrines whereas 119 (34.0%) had no hand washing facilities near the latrine, it is further observed that 280 (80.0%) of latrine/toilet facilities had available water for hand washing while 70 (20.0%) had no available water for hand washing after using the latrines. Again, household head/respondent were asked with respect to the form of latrine/toilet facilities household members are using, this was discussed in Table 4.4 below.

Table 4.4: The forms of Latrine/Toilet facilities household members are using. (Household members without personal latrine)

Latrines	Frequency	Percent
Community/Public Toilet	219	62.6%
Open Defecation in Gutters	8	2.3%
Uncompleted Structure	0	0.0%
Open Field	0	0.0%

Source: Field study, 2021

From the research findings, the researcher probed further to determine the form of latrine/toilet facilities that household head and household members are using. It is observed that from the analysis most of the houses/structures has no toilet facilities in their respective houses, therefore 225 (64.3%) of respondent uses/visit the communal/public toilet, whereas 8 (2.3%) of the respondent uses open defecation in gutters, this justifies the implication that leads to poor sanitation in the various communities in which our findings correspond with Kwarteng.[156] With respect to the objective of the study, the socio demographic dynamics in management of human waste in the community as stated earlier indicates that almost half of the respondent that is 62.6% of household normally used public toilet. The research further probed to determine the distance a respondent must walk to visit a public latrine, this is shown in figure 4.4.1 below.

[156] Kwarteng, S. O., Awuah, E., & Nyarko, K. B. Water, *Sanitation and Hygiene Sustainable Development and Multi-sectoral Approaches.* Shifting from public shared toilets to home toilets in urban settlements: Implications of household demand in Kumasi, Ghana Addis Ababa (Ethiopia), (2009).

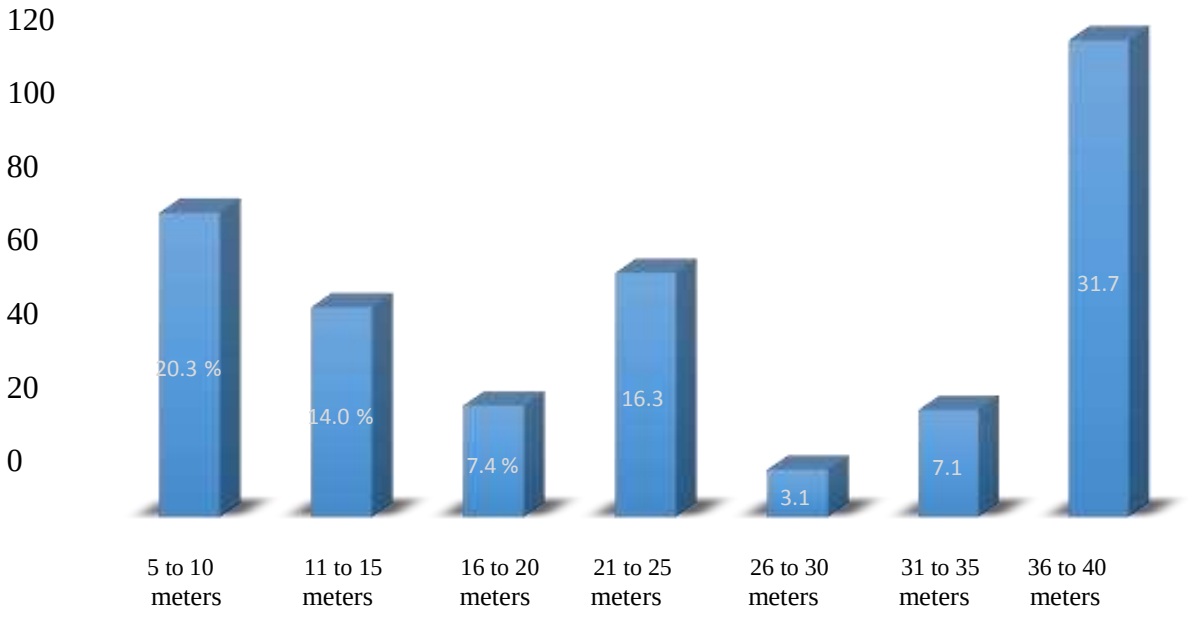

Figure 4.4.1: Approximate distance of the Public Latrine/Toilet from the house.

From figure 4.1, it shows that 79 (20.3%) of respondent indicated that the approximate distance between respondent dwelling place and the latrine was 5-10 meters, 26 (7.4%) reported that it was 16-20 meters while 25 (7.1%) stated that the distance was 31 meters and above. Through observation, it was noted that from the survey findings, sampled households, the approximate distance between their place and the latrine was 1-3 meters. This shows that in most households the distance from the dwelling place and the latrine was convenient and therefore respondents were not expected to give distance as the factor encouraging open defecation. This agrees with Nawab, that availability alone cannot be a solution to open defecation, as seen in the literature review. If indeed some individual can defecate very closer to the toilet facility without entering the facility as observed at the study area, then provision of toilet facility alone is not a solution to open defecation

Moreover, the second objective of the study was to find out how the community religious life and perceptions influence their hygienic behavior and defecatory

practices. From the research findings, it indicates that most of the respondent/households have a good religious life and respond very well to the teaching they receive from their religious leaders. This has changed the attitude of the respondent towards open defecation in the community, this has been analysed in Table 4.5

Table 4.5: Respondent knowledge on perceived effect to open defecation/community religious life and hygienic behaviour.

Items	Yes		No	
	Frequency	Percent	Frequency	Percent
Hygienic and health danger associated with open defecation	313	89.4%	37	10.6%
Effect on health hazard that lead to outbreak of diseases	342	97.7%	8	2.3%
Effect of open defecation on water pollution	325	92.9%	25	7.1%
Effect of open defecation on exposing ones privacy	292	83.4%	58	16.6%
Household member suffered from diarrhea	39	11.1%	285	81.4%

Respondent view on open defecation			
Bad Habit		Not a Bad Habit	
Frequency	Percent	Frequency	Percent
342	97.7%	8	2.3%

Source: Field study, 2021

The research assessed the respondent's knowledge of the effect of open defecation in relation to hygiene, health hazard that led to outbreak of diseases, and effect of open defecation on exposing ones privacy. The study further sought to identify some of the reason hindering the effect of the act of open defecation in those selected communities

as well as the influence of socio-demographic dynamic of respondent in management of human waste in the community. The following are the results of this analysis, of the 350 respondents, 89.4% of them stated that they have heard of Hygiene and health dangers associated with open defecation whereas 10.6% are on the view that they have never heard of any health danger associated with open defecation.

Again, the study also reveals that 92.9% of the respondents are of the view that open defecation has a negative effect on water pollution, while 7.1% are not of the view. The study further shows that 342 (97.7%) respondents viewed open defecation as a bad habit while 8 (2.3) of them felt that it was not a bad habit. This indicates that the level of perceived effect of open defecation is high. This illustrates that among the head of 350 households, 39 (11.1%) stated that they had members who were suffering from diarrhea. This clearly indicates that lack of hygiene and the sanitation facilities had a negative effect on people's health. These findings correspond with Nawab.[157]

4.10 Community's religious life and perception that influence their hygiene behavior and defecatory practices.

Majority of the respondents related their hygienic behavior to education received from their religious leaders that lay emphasis on the fact that God dislikes insanitary conditions. It was even observed that most of the households that have hand washing facilities attached to their toilets are influenced by the Islamic teaching on ablution. However, the findings disagree with Allan, S.C regarding the position of the toilet

[157] Nawab, S. H., Wotiz R. P., & De Luca, C. J. *Multi-Receiver precision decomposition of indwelling EMG signals.* Proceedings of the Twenty-eighth International Conference of the IEEE Engineering in Medicine and Biology Society; (New York City, 2006): 1252–55

facility. Even though Muslims are in the majority of the study area, yet irrespective of where the toilet is built, they do make use of it.

Most of the Christians also believe that "cleanliness is next to Godliness," and therefore try as much as possible to adhere to hygiene. According to respondents, at least they receive education thrice in a year from their leaders about God's response to open defecation and sanitation on the average. Majority also believe that practicing open defecation is against the law of God and attracts

God's punishment. They therefore choose to abstain from open defecation to escape the wrath of God and enjoy his blessings. Indeed, Dauglas and Wilddasky were right to assert that people settle on their defecatory preference and rituals by looking at it from their cultural and religious lenses.[158]

4.11: The reaction of Churches, Pastors, Municipal Authority, leaders of recognized religious and traditional bodies on practice of open defecation in the community.

Open defecation is a serious hygiene problem faced by most developing countries. Defecation is a natural urge and everyone responds when a need arises. However, there are significant differences in people's attitudes towards where to defecate. Cultural attitudes, social customs, and economic factors make people use infrastructure that is considered safe and hygienic by environmental and health standards, even as poverty decreases and toilet facilities become available. Or it cannot be avoided. Therefore, understanding the sociocultural and economic factors underlying open defecation is important for any policy aimed at eradicating practices. This solves the problem of the

[158] Douglas, M., & Wilddavsky, A. Risk and culture: *An essay on the selection of technological and environmental dangers*. Berkeley: (University of California Press, 1982).

third objective of the study, which emphasis how churches and Pastors reaction to the practice of open defecation in the community.

The survey shows that only 35.1% of the 350 household sample size has toilet including the temporary toilet. 62.6% rely on public toilet, meanwhile the total public toilet in the entire community is 35, with 24 seatter each. Some of these public facilities are also locked up in the night, meaning those who patronize them will have to result to any other means. Only 2.3% of the sampling population admitted to open defecation not counting children, and judging from the fact that some of the public toilet are locked up in the night, it is obvious number of people who practice open defecation is more than that and increases in the night. Having acknowledge the deficit in toilet facilities in the communities, the religious leader indicated that they do religious education on how diet and especially open defecation is against the law of God to keep at least church members from the practice.

Not only that, but they also emphasize on the harmful effect of open defecation and when get the opportunity request for the increase in the toilet facility from the government.

According to them, they see it as obligation as God's representative to communicate the mind of God to his people regarding open defecation and believe that the situation would have been the worst had it not been the role of the church to the community. This situation poses only one question that is how can a total of 64.9% of a community household put up a house without a toilet if they love self and others, and have respect for rules and orders? The same goes to the governing authorities, how can only 40 toilet cater for 64.9% of a community population for the past ten years and expect open defecation free community?

It finally indicates that the respondent/household heads and members within the communities emphasis theological reflection on open defecation by saying that pastors and community leaders play a vital role in eradicating open defecation in the community, this emphasis that without the intervention of religious leaders and pastors this practice will have been more deleterious than this.

From the research results, the researcher selected sample units directly responsible for the management of sanitation and open defecation in the community, as well as heads of recognized religious and traditional institutions as mentioned above. Open forum discussion was held among the eight informants as stated earlier. The Asokore Mampomg Municipal Environmental Health and Sanitation Officer, gave a directive on how to control and manage sanitation and open defecation in the municipality. In his responds, he postulated that their initiative regarding open defecation was to build more of the government latrine in the various communities and taking some people within the communities as watch dogs to protect the communities against throwing of rubbish and defecating in gutters to avoid the spread of diseases.

Further information was also obtained from the Municipal Disease Control Officer of the Ghana Health Service regarding the spread of disease in the communities as open defecation is being considered. He emphasizes that every house must have personal latrine and hand washing facilities, by so doing this will minimize the spread of diseases in the community.

With regard to public toilet attendant in the communities their opinion was for the government to build more public toilet, what they have in the communities is privately owned and expensive. Some household head do not understand why should nature call be expensive, and other latrine be closed in the night. This community leaders wanted

the government to find a mechanism that can allow respondent within the community to have easy access to both private and public latrines.

They further emphasized the use of expensive and complex systems associated with unit processes that consume large amounts of energy and chemicals, as repairs do not necessarily have to be performed on a large scale. There are many cheap options such as Ventilation improved pits (VIP), on-site hygiene systems such as traditional dry, drying and composting toilets, septic tank systems, and natural systems. Cheaper plumbing systems have also been developed and implemented, with smaller diameter pipes placed in shallower trenches. This structure is less expensive and many of these can be built by government officials to eradicate the practice of open defecation in different communities, however decentralized systems and packaged facilities can be cheaper options than the traditional and large centralized systems.

Regarding the theological response to open defecation, religious leaders and various respondents admit that it is the most effective instrument for the eradication of open defecation in the community, since most of the members belong to religious groups and are adherents to religious education. The religious leaders said that they educate members to keep their environment clean and stop open defecation. According to them they also appeal to government officials to construct toilet facilities for the community when they get the opportunity.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is primarily concerned with summarizing the main outcomes achieved after the analysis and interpretation of the data. The conclusions of this project are drawn on the basis of findings and suggestions, and several policy recommendations aimed at addressing the impact of and theological response to open defecation and defecation practices in the suburban community of Ghana.

5.2 Summary of Findings

In summary, the overall aim of the study is to identify theological response to sanitation in Asokore Mampong Municipality. The study uses primary and secondary data. The secondary data consists of effect, causes of open defecation in peri-urban communities in Ghana as well as Journals and books. Non-probability sampling (purposive sampling technique) was used to draw a sample size of 350 from the population. Again, the study uses questionnaires as a means of data collection for the project.

The study revealed that, the high percentage of males as household heads in these predominantly Muslim communities might be due to the practice of the Islamic faith, which does not allow women to head households in the presence of an adult male. Also, women tend to have lower status or are less powerful, translating into the reinforced dominant beliefs about status and competency which always favors men. In these communities, men are always expected to be responsible for protecting and sheltering women. These findings were found to be in agreement with those made by

Ridgeway and Smith-Lovin[159] Other factors were migration to abroad and urban centers, which has been found to reduce the number of male household heads in some localities/communities because of search for better employment opportunities[160] The high percentage of Muslims in the municipalities is as a result of resettlement of the residents (migrants from northern Ghana – Urban centers) specifically Aboabo, Asawase and Aboabo Extension.

The age distribution of most heads of household is between 20 and 49 years. This indicates that the population in these communities is young and thus belongs to the group of employed people[161] Reasons could be that in Muslim communities, early marriages and the resulting premature births lead to children growing up early and starting families of their own.

This age group could also accounted for many household without toilet. Since the youth mostly start to put up their houses without considering toilet, with the view to use public toilet and use the money for the construction of household toilet for something else. The youth, in their youthful exuberance most at times are not ashamed of open defecation; and do not see household toilet as primarily responsibility, when building their houses.

Household size determines open defecation practices (slight impact is 0.34). This means that larger households are 3.4% more likely to defecate outdoors than smaller households.

[159] Ridgeway, C. and Smith-Lovin, L. *The gender system and interaction*. *Annual Review of Sociology* 25, (1999):191–216.

[160] Salamone, F. A. *Hausa concepts of masculinity and the yan dauda*. Journal of men, masculinities and spirituality 1 (1) (2007):45-54.

[161] Ngorima, E., Nkuna, Z. and Manase, G. *Addressing rural health and poverty through water sanitation and hygiene*: Genderperspectives, (13th November, 2008): http://researchspace.csir.co.za/dspace/bitstream/ 10204/2541/1/Ngorima.

Household survey responses suggest that large households are more likely to defecate outdoors. For example, according to a survey, 3.4% of households with 9 or more members had open defecation, compared to 41.1% of households with 13 members. This suggests that large family heads may suffer from the need to meet the basic needs of all members, reducing their ability to build toilet facilities at home. The head of the household, which has many members, argued that the cost of constructing toilet facilities was high and therefore not a necessary investment. They recognize the environmental and health benefits of owning a toilet at home, but this negatively impacts their willingness to build a toilet. As a results of this, it was also revealed that those households with large number of people are unable to provide enough or equality in toilet facility in proportion with the number of people in the household. This agree with Osumanu, I.K. Kosoe and Ategee. F as sited in the literature review, and also with Jenkins on economic status in sanitation preference.

Therefore, such households choose outdoor and gutter drainage. This has a serious impact on the elimination of defecation in the community, as 41.4% of the households included in this study are made up of 6 or more members, compared to the national average household size of 4.4 people.

The results show that there is a significant relationship between occupation and open defecation. The largest single group of respondents (3.4% and 1.7%, respectively) consists of farmers and retirees. In other words, households whose heads work in agriculture, and retirees who do not work have a higher probability of defecating openly in gutter. The estimated marginal effect is 0.051, which means that pensioner households are 5.1% more likely to defecate openly than non-farmer households. This is in line with research expectations, as a person's profession determines their source of income. In general, farmers / retirees have lower incomes than other professions.

Especially in the community (Ghana), it is not possible to farm all year round in the rain, and most of the year the farmers are unemployed, affecting their income. Farmers also spend more time on the farm during the farming season and may not feel the urge to build toilet facility at home.

This also means that the practice of open defecation by the youth of the study area and the attitude of not making household toilet a priority has been a long time practice, and the possibility of the number getting doubled in the coming years is high if nothing is done to curb it, for the current youth bracket of (56.8%) of the household heads to own household toilet.

As expected, open defecation has a negative link with income. The higher the head of household's income, the less likely the member will defecate openly. This suggests that high-income people are more likely to own toilet facilities. This result is consistent with a priori expectations that higher incomes will provide households with the opportunity to meet the costs of providing basic needs, including hygiene, and is consistent with findings from other studies.

Although some members of households with toilet facilities may practice open defecation, but the results of this study show that having toilet facilities has a negative impact on open defecation practices. Household's members without toilet facility are more likely to engage in open defecation than household with toilet facility. This is in line with the a priori expectations of the study, as households with home toilets are always comfortable responding to nature calls, such as during the rainy season and unusual times. However, if household toilet facilities are not well maintained, some house owners may choose to empty them outdoors or in gutters, especially when such an opportunity is available.

The Local Government classify these selected communities Aboabo, Tafo, Asawase, Oforikrom etc as low-income urban settlements[162]. This is particularly true as the survey found most household heads to be earning low incomes between GH¢ 100 to GH¢ 500. These low-income levels are mostly associated with the household heads that are employed in the informal sector, due to their inability to pursue higher education. Accordingly, informal sector workers rarely attract significant income to meet their family needs.

The nature of dwelling places/units were predominantly rented houses (mostly single rooms). This might be because of high rural urban migrations and high birth rates which has compelled landlords to put up building extensions to cater for the increasing populations. These houses serve as dwelling places for large households mostly Muslims households. Most of the houses which contain these single room houses are in poor conditions, often lacking private toilets, drainage systems, and sanitation or better waste disposal options.

5.3 Conclusions

Open defecation is a serious hygiene problem faced by most developing countries. Defecation is a natural urge and everyone responds when the need arises. However, there are significant differences in people's attitudes towards where to defecate. Cultural attitudes, social customs, and economic factors make people use infrastructure that is considered safe and hygienic by environmental and health standards, even as poverty decreases and toilet facilities become available. Or it cannot be avoided. Therefore,

[162] Ministry of Local Govrernment and Rural Development. Low-Income urban settlement in Ghana, (1996).

understanding the sociocultural and economic factors underlying open defecation is important for any policy aimed at eradicating such practices.

This study examined the sociocultural factors determining open defecation in Aboabo, Asawase Aboabo extension in Asokore mampong municipality, using a mixed method approach. Unlike earlier studies conducted on open defecation in Ghana, this study has provided a comprehensive quantitative analysis of the factors determining open defecation in the Municipality. Although the findings suggest that households have high knowledge of the environmental and health consequences of the practice of open defecation, several sociocultural and economic factors hinder them from using toilet facilities. These factors either make toilet facilities unavailable or inaccessible to households or they encourage people to defecate openly even when facilities for defecation are available and/or accessible.

The study identified six important factors. Education level, household size, occupation, income, traditional norms and beliefs, and the installation of toilet facilities have all been found to be positively important in determining defecation in this study. However, one of the most important variables is how households can afford to build toilet facilities at home. According to the findings, education is one of the means to find a definitive solution to the practice of open defecation, especially when it comes to improving the understanding and implementation of environmental health and health regulations by local governments and eliminating adverse effects.

The study revealed that members of the study area are more readily to accept and practice the teachings of their religion in order to enjoy the blessing and not to endure the wrath of God. Therefore educating community members, especially household heads that God expects them to provide toilet for their tenants, as God's response to open

defecation is indeed the definitive solution or method to achieve open defecation free community. Even though religious leaders educate members about open defecation, and how God expects them to stay away from insanitary condition, the land lords are not made to understand that they are commanded by God to provide toilet or sanitation facility just as he commanded the Israelites.

5.4 Recommendations

- Again, given the size of open defecation in the community, we need to consider a new and innovative approach to public education. Such an approach should emphasize the elimination of traditional practices that impair the use of toilets by considering breaking away from law enforcement and designing appropriate messages for awareness campaigns. Religious and traditional institutions within the community can be powerful tools for communicating such messages. Religious leaders must educate members on the importance of building toilet as a demand of God as religious responsibility, and that failure to provide toilet is aberration likewise practicing by self and allowing children to practice.

- Loan lending principles can also be considered to help households build home toilets. In this context, to maintain fiscal discipline and the ability to fund investment expenses, adequate financing channels must be devised through collaborations with local governments and financial institutions.

- Finally, an open defecation intervention program must include community efforts that leverage the creativity and abilities of locals to take ownership of the transformation process.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

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FACULTY OF SOCIAL SCIENCES COLLEGE OF ARTS AND SOCIAL SCIENCES DEPARTMENT OF RELIGIOUS STUDIES

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THEOLOGICAL RESPONSE TO SANITATION AND DEFECATORY PRACTICES IN PERI-URBAN COMMUNITIES IN GHANA

Dear Survey Participant,

Thank you for your consideration to participate in this study which seeks to understand theological responses to sanitation and open defecation in peri-urban communities (Aboabo1,2 Aboabo Extention and Asawase). It is expected that the study findings and discussion will shape learning and enhancing understanding of the effect of sanitation and open defecation in the communities.

The study is carried by a student from Kwame Nkrumah University of Science and Technology towards the award of MPhil in Religious studies. We assure you that your responses will be treated in the strictest confidence, with the result collected being anonymized and used for statistical and academic purposes only.

Please indicate how things really are rather than how wish they were. Completing this questionnaire will take about 5 to 10 minutes of your time. When completed kindly return this questionnaire to the field enumerator who handed it to you. All question and concerns about the survey can be directed to Stephen Polley - Johnston (0242123290).

Demographic Characteristics of Household Members

Q.No.	Questions	Options
1	Gender of Household Head	□ Male □ Female
2	Age group of Household Head	□ 20 to 29 □ 30 to 39 □ 40 to 49 □ 50 to 59 □ 60 to 69 □ 70 to 79
3	Marital Status of Household Head	□ Single/Never Married □ Married □ Separated □ Divorce □ Widow
4	Highest Level of Education of Head of Household	□ No formal education □ First cycle □ Second cycle □ Tertiary
5	Religious Affiliation of member and Household Head	□ Christianity □ Islamic □ Traditional
6	What is your household size	□ 1 to 3 □ 4 to 6 □ 7 to 9 □ 10 to 12 □ 13 to 15
7	What is your occupation	□ Farmer □ Casual Laborer □ Public/Civil Servant □ Trader □ Masonry □ Miner □ Commercial Driver □ House wife
8	What is your monthly income	□ 100 to 500 □ 600 to 1000 □ 1100 to 15 □ 1600 to 2000

A. HOUSEHOLD SCHEDULE

Field enumerator must visit place of open defecation and in addition to public latrine

Q.No.	Questions	Options	Skip
1	What is the nature of your dwelling units (place)	□ Rented □ Owned □ Family Properties	
2	What is the type of latrine/toilet facilities in the structure/house	□Permanent latrine □Semi-permanent latrine □ No latrine	If No latrine. Go to Q3 & Q4
3	What is form of latrine/toilet facilities are you using	□ Communal/Public toilet □ Free Range in Bushes □ Open Defecation in Gutters □ Uncompleted Structures □ Open Field	
4	What is the distance in meters of the latrine/toilet facilities from the house	□ 5 to 10 meters □ 11 to 15 meters □ 16 to 20 meters □ 21 to 25 meters □ 26 to 30 meters □ 31 and above	
5	Does the structure/house have hand washing facilities near the latrine	□ Yes □ No	
6	Does the latrine have available water for hand washing	□ Yes □ No	

Socio-demographic dynamics of respondent in management of human waste at the community level

1. Which community do you belong to □ Aboabo No1 □ Aboabo No2 □ Aboabo Extention □ Asawase

		Not at extreme						To an all extent
2.	How often do you (respondent) personally use the toilet to defecate	1	2	3	4	5	6	7
3.	How often do the elders (over 60 years of age) in your household use the toilet to defecate	1	2	3	4	5	6	7
4.	When school age children in your household are at home, how often do they use the toilet to defecate	1	2	3	4	5	6	7
5.	For young children who are too young to be able to use the toilet, after they defecate on the ground in your courtyard or in your house, how often do you put their faces in the toilet	1	2	3	4	5	6	7
6.	When any member of your household whether adult or child, needs to defecate in the night, how often do they use the latrine	1	2	3	4	5	6	7
7.	On how many of the last 7 days did you defecate in the open at noon time or at night	1	2	3	4	5	6	7

How the community religious life and perception that influence their hygienic behavior and defecatory practices							
1. How often do religious leaders educate the community on open defecation	1	2	3	4	5	6	7
2. Does the community religious life has an influence on hygienic behavior and defecatory practices	1	2	3	4	5	6	7
3. What are the punishment put in place to punish offenders of open defecation by the community	1	2	3	4	5	6	7
4. Does the community engage in clean up exercise	1	2	3	4	5	6	7
5. Does the community religious life has a positive or negative impact on hygienic behavior and defecatory practices	1	2	3	4	5	6	7

Reactions of community leaders (pastors, imams, churches, mosques etc.) on sanitation defecatory practices							
1. Do churches react on sanitation and open defecation practices in the community	1	2	3	4	5	6	7
2. Do pastors react on sanitation and open defecation practices in the community	1	2	3	4	5	6	7
3. Do mosques react on sanitation and open defecation practices in the community	1	2	3	4	5	6	7
4. Do imams react on sanitation and open defecation practices in the community	1	2	3	4	5	6	7
5. Do chief and community leaders react on sanitation and open defecation practices in the community	1	2	3	4	5	6	7

B. EFFECT OF OPEN DEFECATION

Q.No.	Questions	Options
1.	Do you have good understanding of the hygiene and health dangers associated with open defecation	□ Yes □ No
2.	What is the respondent view about open defecation	□ Bad Habit □ Not a bad Habit
3.	Does open defecation has an effect on the health hazards that lead to outbreak of diseases	□ Yes □ No
4.	Does open defecation has an effect on water pollution	□ Yes □ No
5.	Does open defecation has an effect on exposing ones privacy	□ Yes □ No
6.	Does any household member suffered from diarrhea in the last month preceding the survey	□ Yes □ No □ Can' t remember