

UNIVERSITY OF EDUCATION, WINNEBA

**SANITATION SITUATION AT ABOABO ZONGO COMMUNITIES IN THE
ASOKORE MAMPONG MUNICIPALITY, GHANA**



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ASOKORE MAMPONG MUNICIPALITY, GHANA**



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DECLARATION

Student's Declaration

I, ABENA, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE:

DATE:

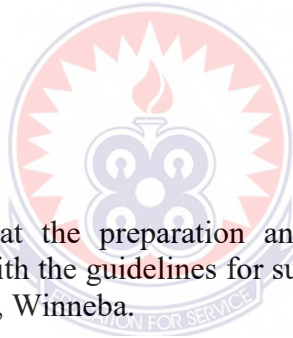
Supervisor's Declaration

I hereby certify that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.

SUPERVISOR'S NAME: DR. SIMON KYEI

SIGNATURE:

DATE:



DEDICATION

This project work is dedicated to my lovely husband, Mr. Benjamin Kwame Kusi.



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I would like to express my heartfelt gratitude to my supervisor, Dr. Simon Kyei his patience, direction and the precious time he sacrificed out of his busy schedules to assist in doing the necessary corrections in order to get this work done successfully. Again, I say kudos to all lecturers who taught me for a good work done. I say a big thank you. I am also grateful to Mr. Edmond Agyeman Amoako and Mrs Christiana Oduro Domfeh for their encouragement and support. God bless you abundantly.

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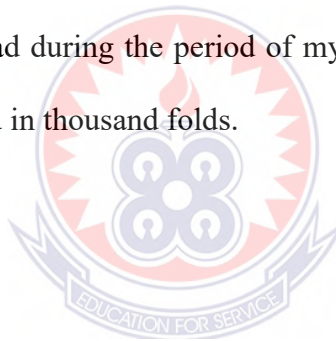


TABLE OF CONTENT

Contents	Page
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ACRONYMS	xi
ABSTRACT	xiii
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of the Problem	7
1.3 Purpose of the Study	9
1.4 Research Questions	9
1.5 Objectives of the Study	10
1.6 Significance of the Study	10
1.7 Delimitation of the Study	12
1.8 Organization of the Study	12
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Overview	14
2.2 Theoretical framework (Sanitation theories)	14
2.3 Conceptual Frame work	19

2.4 The environment	21
2.5 Sanitation	23
2.6 Environmental sanitation	25
2.7 The nature of environmental sanitation situation in Ghana	26
2.8 Roots causes (determinants) of the poor environmental sanitation situation in Ghana.	28
2.9 Effects of poor sanitation	32
2.10 Environmental sanitation management	35
2.11 Environmental Sanitation and KMA By-Laws	39
CHAPTER THREE: METHODOLOGY	41
3.1 Overview	41
3.2 Research Design	41
3.3 Population	45
3.4 Sample and sampling technique	46
3.5 Sample Size	47
3.6 Sampling procedure	48
3.7 Research Instruments	50
3.8 Trustworthiness of Instrument	51
3.9 Ethical Consideration	52
3.10 Data Collection Procedure	54
3.11 Data Analysis	55
3.11.1 Data Analysis Procedure	55
3.12 Study Area	57



CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA	61
4.1 Overview	61
4.2 Analysis of interview	61
4.3 Analysis of observation	92
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION	96
5.0 Introduction	96
5.1 Summary of findings	96
5.2 Conclusion	99
5.3 Recommendations	100
5.4 Recommendations for Future Research	102
5.5 Limitations	103
REFERENCES	105
APPENDICES	113
APPENDIX A	113
APPENDIX B	117
APPENDIX D	125



LIST OF TABLES

Table	Page
3.1: Sample size (participant) distribution	48
4.1: Operational Definitions for Coding Categories	85
4.2: Categories, Frequencies and Sample Expressions Related to the Theme of Interventions	86



LIST OF FIGURES

Figure	Page
2.1: Theory of planned behaviour (TPB) & Integrated Behaviour Model for Water, Sanitation and Hygiene (IBM-WASH)	21
3.1: Satellite map of Asokore Mampong Municipality	58
3.2 District map of Asokore Mampong Municipal	59
3.3 Satellite map of Aboabo	60
4.1: Thematic network showing nature of environmental sanitation in Aboabo Zongo communities	62



LIST OF ACRONYMS

WS:	Water system
H_{WA}:	Response on water availability by household member.
H_{WA1}:	1 st household member's response on water availability
B_{WA}:	Response on water availability by business operator.
B_{WA1}:	1 st business operator's response on water availability
H_{WS}:	Response on water safety by household member.
B_{WS}:	Response on water safety by business operator.
H_{WS6}:	6 th household member's response on water safety
B_{WS1}:	1 th business operator's response on water safety
H_{WSM}:	Response on water supply and maintenance by household member.
B_{WSM}:	Response on water supply and maintenance by business operator.
DSSWS:	Drainage, sewage and solid waste systems
H_{DSA}:	Response on drainage system availability by household member.
B_{DSA}:	Response on drainage system availability by business operator.
H_{TMF}:	Response on drainage system type and mode by household member.
B_{TMF}:	Response on drainage system type and mode by business operator.
H_{PTF}:	Response on drainage passage and treatment by household member.
B_{PTF}:	Response on drainage passage and treatment by business operator.
H_{SF}:	Response on state of facility by household member.
B_{SF}:	Response on state of facility by business operator.
TLU:	Toilet, lavatories and urinal systems
H_{ATU}:	Response on toilet, lavatories and urinary system availability by household member.

- B_{ATU}:** Response on toilet, lavatories and urinary system by business operator.
- H_{MTU}:** Response on toilet, lavatories and urinary system type/mode by household member.
- B_{MTU}:** Response on toilet, lavatories and urinary system type/mode by business operator.
- H_{At}:** Response on toilet, lavatories and urinary system atmosphere by household member.
- B_{At}:** Response on toilet, lavatories and urinary system atmosphere by business operator.
- H_{PSF}:** Response on sanitary facilities provision by household member.
- B_{PSF}:** Response on sanitary facilities provision by business operator.



ABSTRACT

The study was carried out in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis in the Ashanti Region of Ghana. It aimed at investigating the state of sanitation and health of people living in the area. Five key objectives drove the study: explaining the nature of environmental sanitation, identifying root causes of poor environmental sanitation, ascertaining effects of the phenomenon on health, assessing the nature of intervention put in place and exploring best practices in sanitation management. To achieve the objectives of this study, the descriptive research design precisely the case study design was adopted. However, the approach to inquiry was explicitly qualitative. Convenience and purposive sampling techniques were used to select all total of twenty (20) participants from the communities. Semi-structured interview guide and observation guide were the data collection instruments used. Data were analysed thematically and descriptively. The study revealed the nature of environmental sanitation using three indicators: water systems; toilet, lavatories and urinal systems and drainage, sewage and solid waste systems. The study also showed that attitudes and behaviour among other factors remain the greatest determinants of poor environmental sanitation in the area. It was seen that contraction of hygiene and sanitation related diseases and poor access to healthcare were the major effects of poor environmental sanitation on the health of people. The study also identified the diverse interventions put in place by the Assembly in curbing the phenomenon. It was revealed that public education, installation and treatment of sanitation facilities, commitment to change in behaviour and attitude and establishment and compliance of legal systems constitute sanitation management practices that can improve the health of people living Aboabo Zongo communities in the Asokore Mampong Municipality. The study recommends the use of sanitation laws as measures to check sanitation practices. It also puts forward that opinion leaders join environmental sanitation campaigns. The study proposes a collaborative effort of health professionals, residents and stakeholders of environment, health and sanitation in sensitizing the public in sanitation and hygiene related controversies.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Adequate sanitation, together with good hygiene, are fundamental to good health and to social and economic development. Mahatma Gandhi has been quoted to have said, “Sanitation is more important than independence” (Singh, 2013; p.948). Improvements in sanitation and hygiene can substantially reduce the rates of morbidity and the severity of various diseases and improve the quality of life of huge numbers of people, particularly children, in developing countries (Vass, 2003).

Adequate sanitation would reduce the spread of diseases and lead to wider social, economic and environmental benefits (Satterthwaite, 1995). The global challenge of improved sanitation access is compounded by an existing gap between attitude, practice, and knowledge (WHO, 2006). Dangerous practices, attitudes and beliefs, poverty, poor governance, extreme climate, and high population densities are found to increase the likelihood of negative public health outcomes (Pearson & Mcphedran, 2008). A research on women sanitation practices in Kenya found that people particularly women do defecated in plastic bags and throw them on streets because they do not want to be seen using sanitation facilities often (Winter et al., 2019).

Since the adoption of the Millennium Development Goals (MDGs) in the year 2000, the international community has committed itself to improving health, reducing poverty, promoting equality and supporting socioeconomic development, for which, improved sanitation is central (Ampadu-Boakye et al., 2011). The global community has devoted significant resources and energy to achieving the fundamental targets of

improving sanitation for all by 2030 since every human has the right to improved sanitation (UNCG, 2017; Marvey et al., 2002).

Although significant progress has been made since the MDGs era until now, billions of people worldwide are still faced with daily challenges of poor sanitation. Report from agencies like the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) Joint Monitoring Platform (JMP) (2017) indicate that over 844 million people still lack access to potable water and 2.3 billion people lack access to improved sanitation. It is evident that on the global scale, sanitation lags behind water as only 68% of the world's population has access to basic sanitation compared to 88.5% with access to basic water services.

Globally, 2.4 billion people lack access to basic sanitation (7 out of 10 in rural areas), 663 million lack access to good sanitation. Diarrhoea is the second leading cause of death in children under five much of which is preventable by good sanitation (WHO/UNICEF JMP, 2015; WHO, 2017). Sanitation is one of the most important aspects of community well-being because it protects human health, extends life spans, and is documented to provide benefits to the economy. Sanitation (e.g. toilets, latrines, mechanized wastewater treatment) is currently deployed as a way to contain and/or treat human excreta (and in some cases grey water) to protect human health and the environment including water bodies that are sources for drinking water. Therefore, the 2015 United Nation's (UN) Sustainable Development Goal (SDG) 6 for 2030 aims to achieve equitable access to improve sanitation for all and end open defecation. Achieving universal and equitable sanitation for all will require access to information and data on pathogens and sanitation technologies and a network of

community members, professionals, and experts who reside all over the world like the Global Water Pathogens Project.

In few decades ago, great progress has been made in achieving the United Nation's Millennium Development Goal (MDG) to provide access to sanitation. During the MDG period, there were a number of other important international initiatives and declarations. The UN declared 2005-2015 the International Decade for 'Water for Life' to promote international commitments to sanitation (UN, 2015). Also, the international year of sanitation was declared in 2008 to raise awareness and accelerate progress towards MDG Target 7c (UN, 2008). Notably in 2010, access to sanitation was officially recognized as a human right by the UN General Assembly in Resolution 64/292 (United Nations, 2010). In 2013, the Deputy Secretary General of the UN launched a call to action to end open defecation by 2025 (WHO & UNICEF JMP, 2015). Overall, in 2015, MDG Target 7c was achieved. Unfortunately, even with the successes mentioned previously, the world fell short of having those without access to improved basic sanitation by 700 million people particularly in Asia and sub-Saharan Africa (WHO & UNICEF JMP, 2015).

The current situation in Africa is even more disturbing as only 28% of the people in sub-Saharan Africa have access to basic sanitation (WHO & UNICEF, 2020). In the Africa context and the sub-region, sanitation in West Africa, in particular, is struggling to meet the demands for sanitation set by the Millennium Development Goals. This region has witnessed relative stagnation in sanitation coverage since 1990, when total access to basic sanitation was 32% (WHO & UNICEF, 2008). However, these regional figures hide significant differences between countries. For example, improved sanitation coverage in Burkina Faso was only 11%

in 2008, while in Ghana it was 13% and in Mali it was 36% (WHO & UNICEF, 2010b). There are also significant differences between urban and rural areas. For example, access to sanitation facilities in Burkina Faso was 6% in 2008 while urban access was 33% whereas in Ghana, over 10 million urban dwellers live with unimproved sanitation services (WASHfund, 2019).

Although, statistically, West African nations are slowly increasing the percentages of their population with access to an improved sanitation, these numbers can be misleading in the face of rapid population growth. WHO and UNICEF (2010) estimated that inability of sanitation efforts to keep pace with population growth has resulted in an increase of over 37 million people in West Africa without access to sanitation between 1990 and 2008.

The types of toilet facility technologies commonly available in West Africa can be classified broadly into two: flush toilets and pit latrines. The flush toilets (including pour-flush latrines and aqua privies) are generally connected to on-site septic tanks or in a few urban centers to a sewerage system and treatment plant. Yet, even in the urban areas, the majority of residents are served by on-site pit latrines. For example, the sanitation plan for Ouagadougou recognized on-site options as a solution for 80% of the city (World Bank, 2002). On-site latrines are generally simple unimproved pits and double or single-vault ventilated improved pits (VIPs). In recent years, the popularity of urine-diverting dry toilets (UDDT) has increased, although these are still relatively rare.

From an institutional stand-point, responsibility for the management and operation of these systems is universally at the household level, with the exception of the sewerage systems which are supported by municipal national organizations.

Studies show the state of sanitation in Mali and Burkina Faso who have an estimated population of 12.4 million and 14.7 million respectively (WHO, 2019). Both are land-locked Francophone countries in the semi-arid savanna of West Africa. Approximately 80-90% of their populations are tied to the land through agriculture and animal husbandry. Mali and Burkina Faso rank as the 177 and 178 out of 182 countries on the Human Development Index (UNDP, 2012), with GDPs per capita of US\$1124 and US\$1083 respectively. In Mali, 40% of the inhabitants lack access to improved sanitation and drinking water sources and in Burkina it is 28% (ibid.).

It is worth noting that apart from the general low levels of sanitation coverage in West Africa, there are a number of other challenges complicating the situation. Ensuring good sanitation practices and planning of sanitation, dealing with infrastructure and logistics, financing, institutional capacity, supply chains, user acceptance and willingness-to-pay are generally complex issue (Wright, 1997). Although it is beyond the capacity of this thesis to cover all of the sanitation practices and challenges facing sanitation and address them within its analytical framework, it is still important to recognize their existence of poor sanitation, particularly in Aboabo a suburb in Kumasi and how to curb it during actual planning by the metropolitan Assembly.

Like other African countries, Ghana faces serious constraints to meeting the challenge of providing adequate and improved sanitation for its rural and urban inhabitants. The economic growth in Ghana has been accompanied by rapid urbanization, putting a strain on infrastructure and the provision of sanitation facilities (Mariwah 2018). Among competing demands for public investment (including education, health, transport electricity and water), sanitation has not been prioritized.

Thus, not much progress has been made in achieving the sanitation target with the current coverage of 21% still lagging behind the MDG target of 54% (WHO, 2012)

In Ghana, the impact of unhygienic practices on the health of communities is devastating. The unhealthy open defecation practice, for instance, degenerates into deadly diseases such as tuberculosis, cholera, hepatitis, dysentery, typhoid and diarrhea (WHO & UNICEF, 2017). The author argues that Ghana is currently practicing nearly 100% open defecation in principle, as about 5.2 million Ghanaians (or 19% of total population) openly defecate (DWAF, 2005), while collected and stored excreta and other waste are mostly improperly disposed, which technically, equates to open defecation. The repercussions of open defecation and inappropriate waste disposal are eutrophication of aquatic life, adverse health implications on Ghanaians, and environmental degradation (Ampadu-Boakye et al., 2011). Ghana's economy loses 420 million Ghanaian cedis each year (US\$290 million, 1.6 percent of GDP) each year due to poor sanitation, according to a report today released by the World Bank's Water and Sanitation Program (WSP) (World Bank, 2002). The desk study reported that the about 74% of these costs come from the annual premature death of 19,000 Ghanaians from diarrhoea disease, including 5,100 children under the age of 5, nearly 90 percent of which is directly attributable to poor water, sanitation, and hygiene (Amoaning, 2006). Health-related costs accounted for nearly 19 percent of the total economic costs, while access time and productivity losses accounted for about 7 percent. The study also found that, 4.8 million Ghanaians have no latrine at all and defecate in the open, and that the poorest quintile is 22 times more likely to practice open defecation than the richest.

Also in Ghana, a field study conducted reviewed that 22.9 million, which is slightly better off and ranks as a medium development country (152 of 182) compared to the low human development ranking of the other two (UNDP, 2012). Ghana has a GDP of US\$1334 and only 20% of its population lack access to improved water sources which affect the health of the people (UNDP, 2012). The northern part of Ghana also lies in the semi-arid savannah climate zone while the southern coast is more humid and receives more rain. While Ghana has performed better economically over the last decade, in 2008 it still reported the lowest urban sanitation coverage of the studied countries 18%, versus 33% and 45% in Burkina Faso and Mali respectively (WHO & UNICEF, 2010). The World Bank is active in supporting water and sanitation projects in this country, as well in Mali and Burkina Faso. It is as a result of these serious consequences of poor sanitation that have triggered the researcher's desires to investigate into sanitation and health of people residing in Zongo communities with special reference to Aboabo in Kumasi Metropolis.

1.2 Statement of the Problem

Sanitation is one of the most basic services in human life. Improving environmental sanitation is known to have a significant beneficial impact on health both in households and across communities. Coupled with the high population growth there is lack of institutional capacity to formulate and adopt strategies to ensure proper environmental management in Aboabo. The use of plastic bags as packages for drinking water and other wares and the proliferation of fast food joints which package cooked food in styrofoam, and the indiscriminate disposal of these materials in the environment is an eye sore in Aboabo in the Kumasi metropolis (KMA, 2008). Parts of the city are almost always dirty. Open spaces, market places, car parks and many other public and private places are littered with refuse. In most cases, drains are

clogged or totally blocked and many compounds are hemmed in by solid waste, posing health threats to children who play and live around Aboabo.

Several efforts have been made by the Asokore Mampong Municipal Assembly to ensure that Aboabo is always clean but to no avail. It has engaged the services of private waste management companies to ensure that streets are always cleaned and also to ensure that communal dumpsters are emptied regularly. Coupled with these are the provision of new sanitation facilities and the maintenance of old ones. However, the behaviour and attitude of the inhabitants towards sanitation do not augment this effort. People do not seem to care about good environmental sanitation practices and constantly litter indiscriminately without considering the future effects of these poor sanitation practices on their health. If appropriate efforts are not made to halt such practices, the city will continue to spend the greater part of her resources in an attempt to ensure good environmental sanitation without success.

Poor environmental sanitation has a serious health risk and an affront to human dignity. There are many threats of pollution where there are no sanitation systems or where sanitation management systems do not work properly. Aboabo is affected by indiscriminate disposal of waste. As a result of this development, the environment has been subjected to varying degrees of poor sanitation. For example, a recent survey carried out by the Kumasi Metropolitan Assembly on the state of sanitation in all the towns within the Metropolis placed Aboabo last on the ranking scale (SFD, 2015; Danso, 2018). In order to solve any problem, it is important to appreciate the issues that contribute to it. Invariably, identification of the problem is also believed to move along with the solution.

Numerous health impact on research have evidently recognized that improving sanitation alone is generally required but not adequate to attain broad health effects if personal and domestic hygiene are not given equivalent prominence (Scherlenlieb, 2003). The troubles of safe sanitation provisions in developing countries have previously been dealt with by researchers for quite some time. However, until recent times studies were mostly considered as technical and/or economic problems. Even rural sanitation issues are repeatedly dealt with from an entirely engineering point of view, with only a simple reference to social or demographic aspects. Therefore, relatively not much has been learnt about the case of sanitation and the health of the people in Aboabo community which is engulfed with filth.

It appears that over the years the effort of the Asokore Mampong Municipality to provide the sanitation situation for the Zongo communities such as Aboabo has not changed the status quo leaving the health of the people in the area in danger. This thesis therefore looks at the root cause(s) of the poor sanitation among the zongo communities like Aboabo and assess the efforts being made by the authorities to improve the situation in Zongo communities in Ghana.

1.3 Purpose of the Study

The study set out to examine the state of sanitation in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis, Ghana and as well look out for best practices to improve sanitation practices among the people in the aforementioned study area.

1.4 Research Questions

The study sets out to find answers to the following relevant questions.

1. What is the nature of environmental sanitation situation in Aboabo Zongo communities in Kumasi?
2. What are the root causes of the poor environmental sanitation situation in Aboabo Zongo communities in Kumasi?
3. How does poor sanitation affect health of people in Aboabo Zongo communities in Kumasi?
4. What nature of interventions are embarked by the Municipal Assembly to solve sanitation problems in Aboabo Zongo communities?

1.5 Objectives of the Study

Specifically, the study seeks to:

1. explain the nature of environmental sanitation situation in Aboabo Zongo communities in Kumasi.
2. identify the root cause(s) of the poor environmental sanitation situation in Aboabo Zongo communities in Kumasi.
3. describe how poor sanitation affect people's health in Aboabo Zongo communities in Kumasi.
4. investigate the nature of interventions that are embarked by the Municipal Assembly to solve the sanitation problems in Aboabo Zongo communities in Kumasi.

1.6 Significance of the Study

With the conceptual dimension, environmental sanitation management, according to the MLGRD (2011), comprises all activities aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the

population. The study will therefore bring to the fore the status quo of sanitation in Aboabo and also the nature of the human, social and economic elements of the people in Aboabo.

The study will unearth the causes of poor sanitation which will automatically pave way for the appropriate intervention to curb the problem. Also, the study would identify and make appropriate recommendations to government and KMA in relation to factors responsible for poor sanitation in Aboabo in the Kumasi metropolis and suggest measures to solve these problems.

The study will also help Kumasi Metropolitan Assembly (KMA) and Asokore-Mampong Municipal Assembly (AMMA) to identify specific sanitation and health needs required by the people of Aboabo. When the required needs are identified, it will help the KMA, AMMA and Non-Governmental Organizations (NGOs) to organize periodic sensitization workshops which will inure to the benefit of the people in Aboabo. It will avoid the practice and behaviour of any insanitary act which will have any direct bearing on the health of the inhabitants. Peoples will seriously consider good life style which will provide them with the most appropriate healthy living.

Also, the study will unearth the effects of both poor and improved sanitation on the health of the people in Aboabo in the Kumasi metropolis. It is acknowledged that good and improved sanitation has been found to be increasingly important in the life of the people in any geographical location because it redefines the well-being of the people significantly and improves people effectiveness. The study will in no doubt help the occupants of Aboabo to prioritize their life style through health-adjusted life which will lead to quality-adjusted life.

Finally, the study will serve as a basis for further studies. Thus, it can stimulate further research into other areas of the problem. The study would also help KMA and policy makers to come out with policies and programmes on good sanitation practices in Aboabo that would serve as useful guide to all the suburbs in the Metropolis.

1.7 Delimitation of the Study

The study was delimited to people in Zongo communities at Aboabo in the Asokore-Mampong Municipality in the Kumasi Metropolis of the Ashanti Region of Ghana. The study setting (Aboabo) was selected for two reasons; first, it was ranked last in a recent survey conducted on sanitation by KMA on all the suburbs in Kumasi, and second, the problem of poor sanitation was highly observable in the selected area (Aboabo).

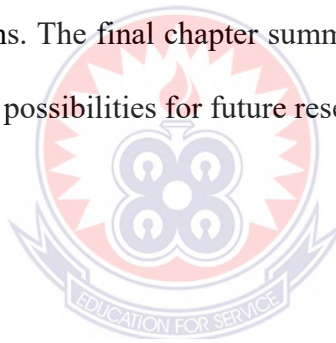
Furthermore, the concepts of sanitation and health were the concepts discussed in the study. For the purpose of this study, the research was focused on specific selected components of environmental sanitation; the nature of environmental sanitation situation; the root causes of the poor environmental sanitation situation; the effects of poor sanitation on the health of people as well as best practices in sanitation management to improve the health of the people in the study area.

1.8 Organization of the Study

The study is organized into five chapters. Chapter one will deal with the introduction. It includes background to the study, statement of the problem, the purpose of the study, specific objectives, research questions and significance of the study. Delimitation of the study and organization of the study are all in this chapter.

Chapter two reviews related literature. The researcher evaluated relevant previous studies on the nature of sanitation situation in Aboabo; the causes of the poor sanitation situation in Aboabo; the effects of poor sanitation on the health of people in Aboabo and interventions to curb poor sanitation in Aboabo. The review highlighted the theoretical framework and empirical review and a summary at the end of the chapter.

Chapter three explains the study methods; it includes research design, study area, the study population, sample size and sampling techniques, the research instrument, data collection and data analysis procedures. The chapter ends with a summary. In chapter four, the researcher presents the findings which discusses in line with the research questions. The final chapter summaries the study, conclusions to be reached, implications and possibilities for future research.



CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This section reviews concepts of environmental sanitation. It discusses the theoretical framework and other aligning environmental sanitation and health related issues. Specifically, it touches on theoretical framework (theories of sanitation), sanitation, environment, environmental sanitation, nature of environmental sanitation situations in Ghana, root causes (determinants) of poor environmental sanitations, effects of poor sanitation on health and environmental sanitation management.

2.2 Theoretical framework (Sanitation theories)

The study is underpinned by two major sanitation theories; Theory of Planned Behaviour (TPB) and Integrated Behavioural Model for water, sanitation and hygiene (IBM-WASH).

2.2.1 Theory of Planned Behaviour (TPB)

The theory of planned behaviour is a theory that links beliefs to behaviour. Broadly, it states that three essential elements; attitudes, subjective norm and perceived behavioural control work together to inform one's behavioural intentions. Hence, behavioural intention is presumed to be the most proximal determinant of human social behaviour. This concept was developed as an enhancement on the predictive power of the theory of reasoned action by including behavioural control (Ajzen, 1991). The study therefore made use of this theory partly owing to the fact that it is a blend of theories, which its applicability will basically have the strength to operate on these three fundamental theories of environmental sanitation namely, the behavioural change, participation and system theories.

The behavioural change theory holds that individuals usually consider the consequences of their behaviour before engaging in it and that attitudes influence behaviour (Zanna & Rempel, 1988). Shove (2010) continued that an attitude is a disposition connected in a meaningful way to a specific situation and, therefore, serves as a basis for a reaction in that situation, which becomes a behaviour. Bringing this logic to bear on environmental sanitation, it can be argued that since attitude is connected with behaviour, how an individual feels about environmental sanitation, namely one's attitude to it, influences one's sanitation behaviour, which invariably becomes demonstrated in one's sanitation practices (Mensah, 2019).

Kim and Hunter (1993) also support the idea that thinking and beliefs shape attitudes, behaviours and actions towards environmental sanitation. In an exposition on knowledge-attitude-behaviour change theory, Matthews and Riley (1995) similarly argued that an increase in knowledge could lead to attitudinal change and subsequently influence behaviour. It can be deduced from Matthews and Riley's (1995) argument that an increase in people's environmental sanitation knowledge could increase their awareness and deepen their appreciation of sanitation issues, which could positively influence their attitude and behaviour towards maintaining acceptable sanitation practices.

The participation theory, which forms a major component of the umbrella theory (TPB), emphasizes the idea of empowering stakeholders of development to endeavour to be actors rather than passive subjects in taking decisions and undertaking activities that improve the lives of the people (Sukhor et al., 2017). The central tenet of this theory is that although change agents serve as catalysts, the ultimate beneficiaries of a development intervention must participate in the

intervention so they will own it to make it sustainable (Reed et al., 2018; Singhirunnusorn, Donlakorn, & Kaewhanin, 2012). The ecological perspective of the participation theory extends this logic by advocating participation in environmental management endeavours by stakeholders for improved health and environment (Hotta & Aoki-Suzuki, 2014; Ramayah, Lee, & Lim, 2012). This perspective argues that individual and collective efforts and capacities should be harnessed to address unpleasant community challenges associated with environmental sanitation.

The systems theory, yet another branch of the TPB, has also been touted as one that can be leveraged for effective environmental sanitation. According to Macy (1991), systems theory offers an investigative framework for exploring a given phenomenon in a comprehensive manner. The focal point of the theory borders on taking a holistic view of a system to ensure that all its components work to make the entire system function as efficiently as expected (Bertalanffy et al., 1968).

The theory of planned behaviour is useful to this study because perceptions like behaviour are influenced by our knowledge, beliefs, values, and norms but can be formed without experience and knowledge of the person. The more knowledgeable we are about environmental sanitation, the clearer our opinion tends to be, and the stronger our (feelings) perception. Similarly, being informed about an issue is even more likely to influence behaviour when knowledge is gained from first-hand experience (Fazio & Zama, 1981). The Theory of Planned Behaviour (TPB), as a framework is not only good for understanding, explaining and predicting behaviours, but also relatively ideal to providing a useful guide for designing intervention strategies to change or maintain behaviours.

2.2.2 Integrated Behaviour Model for Water, Sanitation and Hygiene (IBM WASH)

This model basically rallies on three primary dimensions. These are the contextual, psychosocial and technology dimensions of WASH practices. Dreibelbis et al. (2013) opine that the Integrated Behavioural Model for Water, Sanitation and Hygiene (IBM-WASH) emphasizes on ability to promote and sustain behaviour change at the individual, household, community, and structural/institution levels.

2.2.2.1 Contextual dimension

The contextual dimension gives the characteristic of the setting, personal, or environment that are in most cases outside the range of influence of program activities, but they can affect acceptance of certain products and/or behaviours. Examples are capacity to get sanitation products, access to enabling resources (like water for hand washing), socioeconomic, demographic and household characteristics and the physical environment. The context in which behaviour occurs is dynamic and changes throughout the day children go to school, adults go to work, household members go to the market. The final level of the contextual dimension explicitly addresses these by identifying other opportunities or the lack of other opportunities to repeat and continue practicing an improved behaviour. Understanding hand washing behaviours among school children at home must be understood within the context of hand washing water, soap, and facilities available at schools. The WASH framework provides a simple, adaptable tool for understanding WASH behaviours and habit formation that is informed by existing theoretical insights at multiple levels and dimensions (Dreibelbis et al., 2013).

2.2.2.2 Psychosocial dimension

The psychosocial dimension in this model consists of issues that can influence direct acceptance of any introduced sanitation actions. These are taken as behavioural determinants. Example is disgust which has been used as one of psychosocial determinant in WASH to foster hand washing with soap and to stop open defecation. In Community Led Total Sanitation (CLTS), elicitation of disgust at the community level is a key step in mobilizing support for sanitation improvements. Social norms and/or social desirability, and aspirations are also widely acknowledged to influence WASH practices as well as play a central role in Diffusion of Innovation Theory. Knowledge and perceived threat of illness particularly diarrhoeal/cholera diseases are often key components of behaviour change promotion strategies (Dreibelbis et al., 2013).

2.2.2.3 Technology dimension

In this context, according to Dreibelbis et al (2013), issue of consideration is how the introduced technology can have influence on behavioural outcomes. Technology includes its placement because sometimes location of the technology that was expected to facilitate good behaviour toward sanitation practices may inhibit instead of facilitating good sanitation practice. Having soap or water at a convenient location for hand washing was associated with improved hand washing practices following faecal contact. What this theory implies is that an individual's behaviour and attitude towards environmental sanitation to a very good extent depends on exactly where mechanisms have been instituted to shape those behaviour and attitude.

2.3 Conceptual Frame work

After the review of literature, a couple of factors were identified to be emerging issues that affect improper sanitation in Ghana and beyond. These factors subsequently, are said to have had a negative impact on the health of people living in both rural and urban centres. Both empirical and theoretical evidences have all pointed out causal-effect factors of poor sanitation, and they are attitudinally/behaviourally and policy bound. Meanwhile, the accompanying consequences of the phenomenon are many; however, paramount among these outcomes are those that affect health, economy, the ecosystem/biodiversity and education.

Figure 2.1 presents the conceptual framework for the study. Apparently, there are three basic actors involved in creating poor environmental sanitation. These include generators which comprise attitude/behaviour, policy and management system. These combine to generate waste and litter the environment indiscriminately. When these service providers fail to effectively carryout their responsibilities, it results in poor environmental sanitation condition. When the generators do not appropriately dispose of waste, they promote poor environmental sanitation conditions. Lastly, when the generators fail to enforce laws and regulations governing sanitation, it results in poor sanitation. All these negative activities when left unchecked, lead to deteriorating health conditions of the people, increased health cost, environmental pollution and increased cost of providing sanitation services. These therefore call for a new intervention approach to improve sanitation.

The two intervention strategies that could be adopted to improve environmental sanitation are behavioural intervention and regulatory intervention.

These intervention strategies involve activities that would ensure that people understand the consequences of poor environmental sanitation practices and the benefits that would accrue to everyone if people adopt good behaviour towards the sanitation. This could be done through education.

The other complimentary intervention strategy is regulatory intervention. This involves activities that would ensure that people comply with good sanitation standards which can be done through enforcement of sanitation regulations. The tools for achieving these strategies are through education and enforcement. When people are well educated about environmental sanitation, they become proactive and can organise themselves to secure facilities that would ensure good sanitation condition in their locality, even when these are not provided by the local government. When these two intervention strategies are well implemented, they would lead to good environmental sanitation condition. The entire framework is driven by two major theories of sanitation; theory of planned behaviour (TPB) and integrated behaviour model for water, sanitation and hygiene (IBM-WASH).

The adopted theories basically touch on the influence of individuals' behaviours and attitudes. This implies that matters involving sanitation largely rally on actions and inactions of people. This suggests therefore that the status of sanitation be it poor or good has everything to do with the manner in which individuals conduct themselves environmentally in a particular locality. A careful evaluation of the theories also indicates that there are consequences to every demonstrated sanitation practices and other related environmental behaviours and attitudes. Thus, the best way to tackle sanitation controversies is by instituting measures that will manipulate individuals' behaviours and attitudes.

Conceptual Framework on Poor Environment Sanitation

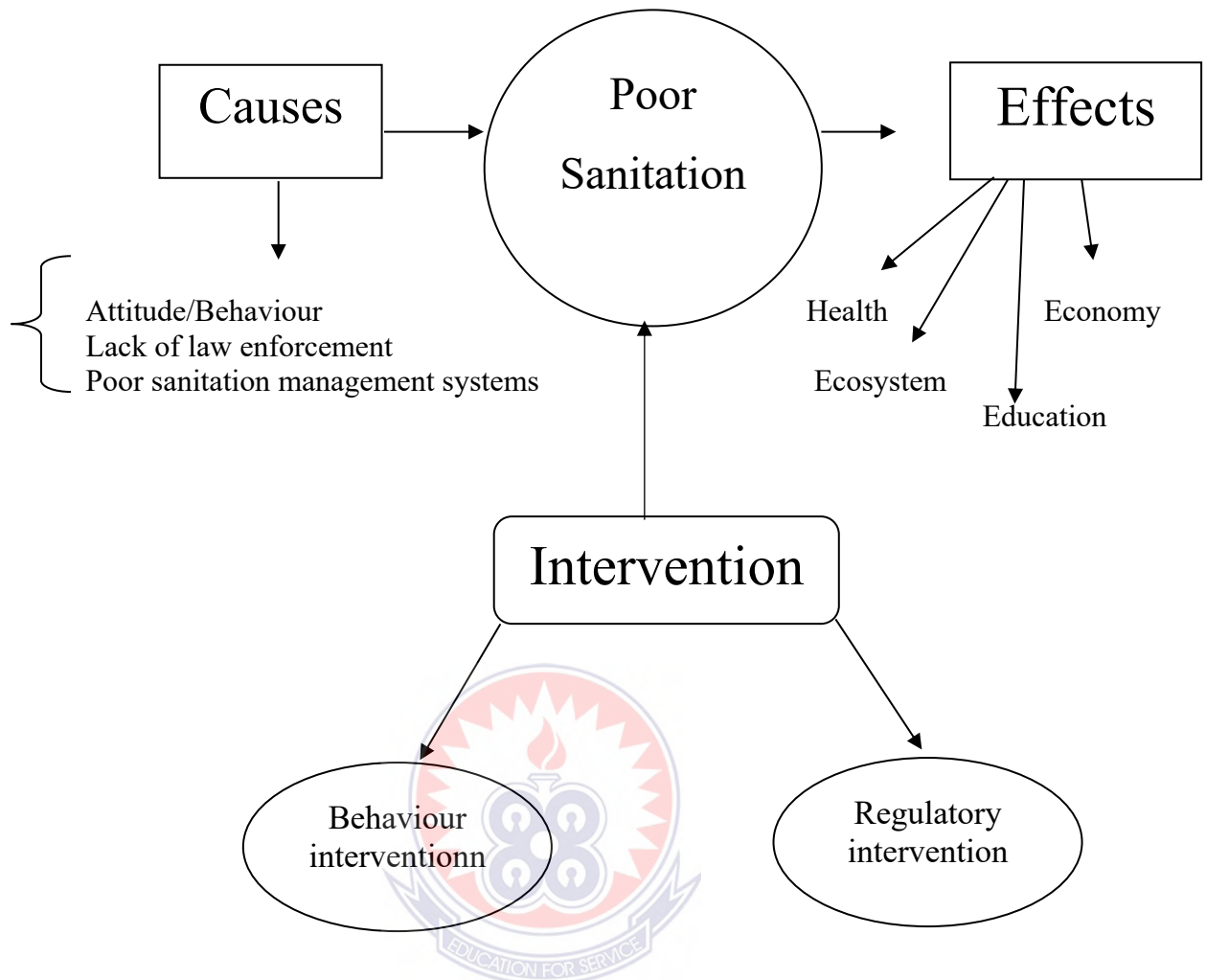


Figure 2.1: Theory of planned behaviour (TPB) & Integrated Behaviour Model for Water, Sanitation and Hygiene (IBM-WASH)

Source: Researcher designed

2.4 The environment

Bell et al (2001) described environment from two major scopes; social and physical. According to them, the environment should be seen as the people and groups among which we live (social) and all the natural (non-human) and artificial (man-made) things we see around us (physical). Bell et al (2001) believe that one's environment is primarily composed of the existence of inter and intra personal relationships alongside the presence of nature. To them, the environment should not

be perceived only as the interaction that ensues among the elements of nature but also as the interconnectedness among human beings. Describing environment from social standpoint means that it is reasonable to consider culture, politics, beliefs, friendship, family, community among others are components of one's environment.

In a similar study, it has been proven that humans by nature live in two universes; first is the natural universe of nature consisting of soils, animals, air, water and plants that preceded the existence of human beings by hundreds of millions of years of which the human being is an integral and inescapable part (Erni et al., 2005). Second is the world of social institutions and artifacts (built world) that humans deliberately created for themselves using science, technology, culture, political organisation and many others. This description agrees with the view of Ruprecht et al (2017) who explain the term 'environment' from the viewpoint of human health. To them, the 'environment' is not physically and/or biologically bound only but it also human-based systems, cultural, economic, political, technological, spiritual and relational that make up the setting in which people live (Zimmerman, 2008).

However, Zimmerman (2008), understood the environment from quite a unique point of view. He saw the environment as the aggregate of an organism be it a person or group of individuals of population. To him, perceiving the environment as the totality of physical, biological and cultural conditions affecting the life of human beings seemed comparatively an inclusive one. Nonetheless, he acknowledges that considering the role genes play in one's course of life in the society, it is prudent to classify them (genes) as a constituent of one's environment. This suggests that the conceptualization of the environment should transcend both social and physical confinements of the individual to include the genetic formation of such individual.

The concept of environment in relation to its scope has been changing and widening with time. Conventionally, the environment consisted of only physical aspects of the planet earth which include land, air and water as biological communities. The passage of time has influenced perceptions held by others regarding its conceptualisation. By virtue of changing moments, individuals have begun to also acknowledge that certain dimensions such as industry, social, economic and politics have the capacity to utterly alter our perception about the environment. This is affirmed by Park (2011) who conceptualises environment from a more contemporary perspective as the social and economic conditions under which we live. Notwithstanding that, the study will consider, adopt and work around the considerably holistic definition given by Zimmerman (2008) on environment as the totality of physical, biological and cultural conditions affecting the life of human beings.

2.5 Sanitation

Otchere (2020) understood sanitation as systems that protect people's health, especially those that dispose efficiently of human waste. This means that, with sanitation, we are virtually making reference to the act of preventing the spread of diseases with an assurance of public and private health. Arguably, across the globe, especially in developing nations, the term sanitation is used to denote excreta disposal facilities (Ruprecht et al, 2017). In sub-Saharan African countries like Ghana, an indent reference is made to the means of safely managing wastes whenever we make reference to sanitation (Park, 2011). From a similar perspective, Miezah et al (2015) described the term by expanding it to mean a state of cleanliness of a place, community or people particularly relating to those aspects of human health including the quality of life determined by physical, biological, social and psychological factors in the environment. Deducing from Otchere's (2020) view, one can broadly project

the term 'sanitation' as a way or practice of ensuring that one's immediate surroundings are well healthily arranged to prevent the spread or sudden occurrence of diseases that may affect the lives of people in a given area.

Generally, sanitation deals with the introduction of interventions in order to reduce people's exposure to diseases by providing a clean environment in which to live and with measures to break the cycle of disease (Schertenleib et al, 2002). This implies that it primarily concerns itself with making the necessary and yet adequate environmental safety provisions and protocols that will help render individuals less prone to any form of disease outbreaks. This usually includes hygienic management of human and animal excreta, refuse and wastewater, the control of disease vectors and the provision of washing facilities for personal and domestic hygiene.

In the same vein, Nyamwaya (1994) oversimplified the term sanitation to suggest the proper disposal of human waste such as faeces and urine. A close-circuit review of this description will mean that keeping the human environment free from harmful substances which can cause diseases constitutes sanitation. Wherever humans gather, their waste also accumulates. Progress in sanitation and improved hygiene has greatly improved health, but many people still have no adequate means of appropriately disposing of their waste. This is a growing nuisance for heavily populated areas, carrying the risk of infectious disease, particularly to vulnerable groups such as the young, the elderly and people suffering from diseases that lower their resistance. Sanitation is therefore a concept explaining activities to ensure safe disposal of excreta, solid waste and other liquid waste and the prevention of disease vectors to ensure a hygienic environment.

These differing but similar conceptualisations of sanitation only take into account mechanisms put in place to control human waste for the sole purpose of stopping disease outbreaks from happening. They however fail to consider the role of behaviour in these attempts. Consequently, the study defines sanitation from the viewpoint of behaviour and facilities as World Bank (2002) rightly reports it as any treatment involving both behaviours and facilities working together to form a hygienic environment.

2.6 Environmental sanitation

According to Chaturvedi and Bassin (2010), the crucial constituents of environment should involve solid waste management, excreta and sewage management, food sanitation and hygienic education and promotion. Having identified these, Chaturvedi and Bassin (2010) wrote on environmental sanitation as the principles and practice that affect health and hygienic condition in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment. Judging from the position of Chaturvedi and Bassin (2010), deduction can be made that environmental sanitation certainly encompasses all the environmental cleaning attempts which aim at promoting disease-free life among individuals. In other words, it can be spoken of as any effort exerted towards the achievement of 'nature' purity.

Evaluating it from the same direction, it was described in a report as any effort or activities that target the development and maintenance of a clean, safe and pleasant physical environment in all human settlements (Ministry of Local Government & Rural Development, 2011). Environmental sanitation comprises several complementary activities, including the construction and maintenance of

sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (MLGRD, 2011).

Environmental sanitation as a term and concept has been adopted, adapted and used to cover the wide concept of controlling all the factors in the physical environment which may have an impact on human health and well-being (Ampadu-Boakye et al, 2011). Consequently, it is perceived as an activity that involves controlling the aspect of waste that has the potency to cause disease outbreaks. In developing countries, environmental sanitation normally includes drains, solid waste management and vector control in addition to the activities covered by sanitation (DFID, 1998). The study conceptualise this concept therefore as any form of commitment by individuals, group and institutions to help keep the natural environment or surroundings clean and safe for all lives.

2.7 The nature of environmental sanitation situation in Ghana

The nature of sanitation in Ghana is explained by Danso (2016). Danso (2016) outlines these to depict that state of sanitation in both urban and rural areas in Ghana: open defecating everywhere particularly residential spaces, beaches, bushes, gutters and road side, discharge of untreated waste into water systems, insufficient toilet amenities for both household and the broad-spectrum public as a whole, laughable and insufficient access to clean drinking water and occasionally scarcity of water, overflowing waste and indiscriminate burning of trash. Mensah (2020) also adds that refuse and rubbish are also seen congregated in positions of urban towns and shops left at the misfortune of the environment.

Danso (2016) again posits that vector-borne illnesses such as malaria, cholera, typhoid, dysentery among others are ubiquitous owing to the fundamental

nonexistence of pest and disease vector' control programmes. Ghana's sanitation issues especially contamination of water bodies has been found out to upsurge the practical struggle and cost of offering water supplies (Mensah 2019; Danso, 2016). Moreover, the spectacle and odour of ineffectually managed wastes establish a key uneasiness to residents and people to Ghana (MLGRD, 2011).

WHO and UNICEF (2019) now considers sanitation as one of the fundamental conditions of human existence. This is as a result of emerging reports showing that sanitation deprived people are confronted with dwindling opportunities to realizing their potential as human beings abound. Poor sanitation, or the inadequacy of it, has great consequences on the day to day activities of people especially with respect to their health and socio-economic development. At the last analysis, poor sanitation was seen among the global impoverishment, inequality and insecurity (WHO & UNICEF, 2008). Realizing the potential canker of poor sanitation, there has been reaffirmation of commitment by the international community towards achieving the Millennium Development Goals (MDGs). More significant of which is the resolve to half the proportion of people without access to safe drinking water and basic sanitation by 2015.

Projection by WHO (2008) however shows that while the provision of improved water could be met by 2015, the goal of improved basic sanitation will be missed narrowly. While most places without improved drinking water are rural, lack of sanitation facilities affects both urban and rural areas (WHO & UNICEF, 2008). In Ghana, people are moving to the cities, particularly, Accra at an alarming rate in search of economic livelihood. This increase in population of the city has undoubtedly put pressure on infrastructure, and there is still the possibility that more of these

pressures could intensify subsequently. In the current situation where many areas lack adequate sanitation facilities, the question is, to where will the overflow turn to dispose of waste? Sadly, this has become of many major towns and cities in Ghana where effective and safe disposal of human wastes has become problematic (Mensah, 2015). Streams, water bodies and drainages are filled with garbage; open defecation almost every especially at seashores, in water bodies and in bushes. Haphazard littering is another environmental sanitation that has gotten on spines of the country; careless plastic management is engulfing Ghanaians day in and day out. Evidence of sanitation situation in Ghana can be seen below:

2.8 Roots causes (determinants) of the poor environmental sanitation situation in Ghana.

Quite a number of studies and reports have identified attitude as one outstanding determinant of poor environmental sanitation (Mensah, 2020; WHO & UNICEF, 2019). WHO and WHO/UNICEF (2015) report that attitudes of community members stifles the efforts of organisations and individuals in fighting poor sanitation. Amoaning (2006) critically observed sanitation situations in some selected areas in Ghana and concluded that community members do not adhere to good hygiene practices provided by health personnel, community based hygiene volunteers, zoom lion and other bodies concerned with improved sanitation. This was earlier noticed by Adarkwa and Edmundsen (2001) who alerted community members are often seen easing themselves in the bushes abandoning pit latrines built in the neighbourhood. The few available ones however are not properly maintained and made safe for human use. Improper disposal of solid waste generated from homes has also been earmarked as an attitude-bound potential contributor of poor sanitation (Mensah, 2019).

Mensah (2019) believes that community members do not know how to dispose refuse; they pour the refuse in front of their homes and do not see anything wrong with that resulting in poor sanitation. Amoaning (2006) contends that ignorance on the part of community members on when and how to properly wash their hands help deepen the poor sanitation situation. Re-echoing further is Mensah (2019) who argues that lack of enforcement of laws on sanitation by authorities helps worsen the deteriorating sanitation. He maintains that state institutions entrusted with the mandate of enforcing the laws on sanitation do not do so thereby making community members irresponsible with regards to sanitation.

According to Worlanyo (2013), the first and only sanitation facilities in 1949 and early 1950s were two unlined pit latrines without superstructures. Domestic solid waste was dumped directly into the nearest bush. Mulama (2008) further reiterates that one of the causes of poor sanitation is failure to treat water from wells before drinking. People who sourced water from vendors did not treat it before drinking. Mittal et al. (2016) had an identical result when they found that 78% of respondents in a sanitation attitude and practices study in Tamil (India) did not treat water before drinking. Boiling, chlorination, and mineral water use were rarely practiced in the community. This result concurs with published data on water treatment in Ghana which showed that about 92% of Ghana's population did not treat their drinking water and drinking water treatment by households was about 3% (Amoaning, 2006). Open defecation in most communities cause a greater challenge in poor sanitation.

The World Bank Group (2020) report that lack of waste bins can contribute to poor environmental sanitation in major commercial zones in Ghana. Poor environmental sanitation practices also affect the environment in diverse ways.

Sharing similar view, Tweneboah and Asiedu (2009) explains that in regions where a large proportion of the population are not served with adequate water supply and sanitation, sewage flows directly into streams, rivers, lakes and wetlands, affecting coastal and marine ecosystems, fouling the environment and exposing millions of children to disease. Looking at poor environmental sanitation from the urban perspective, particularly in the context of urbanization, Mensah et al (2002) states that indiscriminate littering, domestic wastewater, sewage and solid waste improperly discharged presents a variety of concerns as these promote the breeding of communicable disease vectors as a result of air, water and soil pollution.

Inaction on the part of stakeholders causes poor environmental sanitation. Every dollar spent on improving sanitation generates economic benefits (about nine times) that far exceed the required sanitation investments (Nsiah-Gyabaah, 2004). The cost of inaction is enormous. Achieving the MDG for sanitation would result in \$66 billion gained through time, productivity, averted illness and death (WHO & UNICEF, 2008). It is estimated that a 10 year increase in average life expectancy at birth translates into a rise of 0.3-0.4 per cent in economic growth per year (WHO & UNICEF, 2008). It must be noted that environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability.

Similarly, Danso (2016) outlined the following underlying causes of poor sanitation:

1. Nonexistence of technical capability to orientate and upkeep the District Assemblies in the delivery of environmental sanitation facilities.

2. Efforts to assign to the Local Government with environmental sanitation purposes execute by ministries and central government agencies, without relocating the associated resources, employees and apparatus.
3. Wretched and ill enforced environmental sanitation legislation. Insufficient provision of resources for environmental sanitation services, together at state and at area level.
4. Poor dwellers' attitude towards sanitation.
5. At the household level, poor hygienic practices by individuals and communities are compounded by insufficient and ineffective hygiene education.
6. Nonexistence of a vibrant national goal or vision of environmental sanitation as an essential social service and a major determinant of the standard of living.
7. Absence of an officially constituted environmental sanitation sub-sector in the governmental system of sector development planning.
8. Lack of a comprehensive policy assigning responsibilities for environmental sanitation to the relevant Ministries and agencies, resulting in overlaps, gaps and poor synchronization in the management of programmes and services.

There are of course many different reasons to why so many people around the world still have no access to environmental sanitation services. Some of these reasons may be obvious while others may turn out to be oblivious. Notwithstanding, lack of political will, low prestige and recognition of the importance of sanitation, poor policy at all levels, poor institutional frameworks, inadequate and poorly-used resources, neglect of consumer preferences, ineffective promotion and low public awareness and neglect of the importance of women and children are amongst the

common reasons and causes of poor sanitation in many parts of the world (Simpson-Hebert & Wood, 1998).

2.9 Effects of poor sanitation

The impact of sanitation is evitable according environmental studies and health scholars (Worlanyo, 2013; Mensah, 2020). The influence of poor and/or proper sanitation to a very great extent exerts to almost all facets of human life ranging from health, economy, education to ecosystem.

2.9.1 Health

Poor sanitation gives many infections the ideal opportunity to spread, plenty of waste and filth for the flies to breed on, and unsafe water to drink, wash with or swim in (Amoaning, 2006). According to Danso (2016), numerous sickness and injuries reported in Ghana are related to poor sanitation. Poor sanitation is believed to be that cause of certain human parasitic diseases such as schistosomiasis (sometimes called bilharziasis); this sanitation related disease according to WHO and UNICEF (2019) ranks second behind malaria in terms of socio-economic and public health importance in tropical and subtropical areas. The disease is endemic in 74 developing countries, infecting more than 200 million people of which about 10% (20 million) of this estimated population suffer severe consequences from the disease (WHO & UNICEF, 2008).

Diseases attributable to poor sanitation currently kill more children globally than AIDS, malaria and measles put together, and diarrhea is the single biggest killer of children in Africa (Black, et al, 2010). This presents a major risk to public health. Unsightly littering, foul-smelling excreta-laden and choked gutters, stagnant pools of water and flooding during rains, vermin and rodents on mounds of refuse dumps make

poor environmental sanitation lethal to the health of people. In Ghana, there is constant prevalence of malaria, cholera, diarrhoea and typhoid in all communities (Citi News, 2019).

Research on access to primary healthcare among elderlies living in LEAP (Livelihood Empowerment Against Poverty) communities shows that there is a direct linkage between one's ability to access quality healthcare and financial strength (Ottie-Boakye, 2020). Poor environmental sanitation or hygiene affects economic costs outrageously. The health impact of inadequate environmental sanitation leads to a number of financial and economic costs including direct medical costs associated with treating sanitation related illnesses, lost income through reduced or lost productivity, and the government costs of providing health services (WHO & UNICEF, 2017). A World Bank country environmental analysis conducted in Ghana has shown that health cost resulting from poor water, sanitation and hygiene is equivalent to 2.1% of Annual Gross Domestic Product (GDP) (UNICEF, 2008). The tremendous impact of sanitation on health results is significant economic returns on investment in sanitation, for individuals as well as national economies (Black et al., 2013).

2.9.2 Economy

Despite poor sanitation posing immense threat to Ghana's economy as Danso (2016) posits, the significant economic benefits of good environmental sanitation are not well known. Many a time, the media often emphasise on health benefits but the time savings and opportunity cost are equally important stories. Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability

(Danso, 2016). Healthy people by virtue of good and serene sanitation systems tend to be productive through the maximization of productive hours. Consequently, a healthy community is often a more lucrative market for goods, services and investment. Without good sanitation, the world effort of eradicating extreme poverty will be a mirage. High death rate which affects human resource base of a country is also largely associated with poor environmental sanitation (WHO, 2008).

Additionally, poor sanitation also leads to reduced income from tourism due to high risk of contamination and diseases. The effect of poor sanitation is also evident in the entire tourism industry. The Water and Sanitation Programme through a desk study revealed that Ghana loses 420 million Ghana cedis yearly due to poor sanitation (World Bank, 2010). The situation brings about increased procurement costs for chemical and mechanical clean-up operations.

2.9.3 Ecosystem/biodiversity

Poor waste management also contributes to a loss of valuable biodiversity. In the case of coral reefs, urban and industrial waste and sewage dumped directly into the ocean or carried by river systems from sources upstream, increase the level of nitrogen in sea water. Increased nitrogen causes overgrowths of algae, which in turn, smother reefs by cutting off their sunlight (WHO, 2008). Improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population (Kumekpor, 2002 in Chaturvedi & Bassin, 2010). Danso (2016) also laments that lack of adequate sanitation is a major threat to the environment which includes the degradation of the urban environment by the indiscriminate disposal of

solid and liquid waste and the pollution of fresh water and lakes by untreated human waste, the result being smaller and contaminated fish catches.

2.9.4 Education

The issue of poor sanitation is one of the special conditions which prevents girls from fully participation and achievement in schools and to an extent of forcing them out of school (BBC, 2016). Studies have shown that sanitation related diseases such as diarrhea and cholera continue to remain among the biggest child killers in Africa (BBC, 2016). Without proper sanitation, we cannot achieve universal primary education, promote gender equality, empower women and reduce child mortality. There is decreased productive days gain obtained within a year including low school attendance for children as a result of poor sanitation (WHO, 2008).

2.10 Environmental sanitation management

Mitchel et al (2016) explains environmental sanitation management as the actual decisions and actions concerning policy and practices regarding how resources and the environment are appraised, protected, allocated, developed, used, rehabilitated, remediated and restored, monitored and evaluated. Environmental sanitation in Ghana is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population (MLGRD, 2011).

In line with government's efforts toward sanitation enhancement, the National Environmental Sanitation Strategy and Action Plan identifies (NESSAP), identifies seven (7) focus areas necessary to drive forward efforts for achieving good sanitation; capacity development - information, education and communication, legislation and regulation, levels of service, sustainable financing and cost recovery,

research and development, monitoring and evaluation (IESS, 2016 as cited in World Bank Group report, 2020). In accordance with GPRSII (2006 - 2009) as well as the current Medium-Term Development Policy Framework (MTDPF, 2010 – 2013), environmental sanitation is considered as a major component of the human resource pillar for improving quality of life (World Bank Group, 2020).

What is notable about interventions that need to improve environmental sanitation is to consider consultation with, and participation of stakeholders from the grass roots upstream to waste management services to ensure that there is high integration in the delivery of waste management service (UNEP, 2002). This only calls for good and strong Environmental Management System (EMS). Environmental Management System (EMS) refers to the management of an organisation's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organisational structure, planning and resources for developing, implementing and maintaining policy for environmental protection.

Another important intervention that has been advocated by many is the promotion of ways to recycle certain waste products and to treat them as resources for utilization as opposed to disposal through the voices of Environmental Protection Agencies (EPAs) (Vodounhessi, 2006). According to Vodounhessi, (2006), the Environmental Protection Agency is very collaboration-oriented, which weakens its regulatory abilities. There is a need to empower these agencies to educate residents on how best they can help to protect the environment and the need to commit to this cause. There is also the need to ensure that models of sanitation are suitable, home-made models carefully crafted to address sanitation challenges under the prevailing circumstances which may not be applicable to other geographical places with

different economic characteristics. In a nutshell, there is the need to fashion out environmental sanitation system which is understood by the people, for the people, and is owned by the people.

The goal of environmental sanitation is to contribute to the improvement of quality of life and the achievement of social development. Environmental sanitation should create and maintain conditions whereby not only people can lead healthy and productive lives, but also where the natural environment is protected and enhanced. To achieve these twin objectives, the universal goal of environmental sanitation can be stated as follows: Water and sanitation for all within a framework which balances the needs of people with those of the environment to support healthy life on earth. This requires the promotion of services which SANDEC (2000) describes are people-centered, meet basic needs, serve the un-served, improve public health, reduce impact of poverty, are sustainable environmentally, socially, institutionally, economically and financially, respond to demand, respect the need to preserve and protect the resource base and protect/enhance ecological integrity.

Mitchell (2016) suggests that one appropriate intervention for poor environmental sanitation is through an attempt to design and implement policies that gear towards improving poor environmental sanitation. In consultation with a variety of stakeholders, the Ghana's National Environmental Sanitation Policy (ESP) was developed in 1999 and covers the broad spectrum of environmental sanitation including solid and liquid waste, industrial and hazardous waste, storm water drainage, environmental and hygiene education, vectors of disease, and disposal of the dead (Ministry of Local Government and Rural Development [MLGRD], 2011).

The policy was developed by the Ministry of Local Government and Rural Development (MLGRD). It is a fairly concise document that sets out basic principles and objectives, identifies roles and responsibilities and also covers environmental management and protection, legislation and funding among others. The Environmental Sanitation Policy is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (Ministry of Local Government and Rural Development [MLGRD], 2011).

The policy identifies many of the major problems and constraints in environmental sanitation, including the lack of assigned roles for governmental bodies, the lack of capacity and skilled professionals at all levels, and the problems associated with the transfer of responsibilities for environmental sanitation without the corresponding budget, personnel, and equipment transfers. The policy then lays out its strategy to deal with these problems. Key items in the strategy include:

- a) Defining the roles and responsibilities related to environmental sanitation of institutions from the national ministries down to unit committees, community organizations, and the individual;
- b) The privatization of environmental sanitation services;
- c) The creation of a National Environmental Sanitation Policy Coordinating Council (NESPoCC) and a District Environmental Sanitation Fund (DESF) and;

- d) The phasing out of pan latrines (by 2010). Targets were set for 2020 (except for the phasing-out of pan latrines, which was targeted for 2010).

2.11 Environmental Sanitation and KMA By-Laws

As part of the interventions to curb poor environmental sanitation, Kumasi Metropolitan Assembly has promulgated the following by-laws. Sound environmental law and governance are essential for protecting the natural environment and the life and livelihoods that depend on it. Governance here refers to the Assembly's use of a range of legal tools to require or promote desired behaviour. These tools could be traditional regulations, environmental assessments, information disclosure requirements, market mechanisms, economic incentives, or public policies to promote voluntary action on a scale that will enhance urban environmental sanitation and environmental protection (KMA, 2018).

This bye-law defines the responsibilities of house owners, property owners, tenants or other occupants in keeping their immediate environment clean. It also prescribes the punishment that should be meted out with offenders of the byelaws. It also covers general sanitation or hygiene. It describes what constitutes a sanitation offence and what should not be done by both property owners and pedestrians to cause pollution in the city. The cleansing bye-law regulates activities that promote visual pollution and nuisances and prescribes penalties for such offences.

2.12 The Chapter Summary

The review covered broadly the nature of the environment and present sanitation conditions in contemporary Ghanaian societies and beyond. The literature likewise highlighted current trends of sanitation practices emanating from human activities that tend to walk hand in hand with the environment. There are also both

empirical and theoretical proofs of how people's attitudes and behaviours towards sanitation, lack of law enforcement and poor sanitation systems may act as primary determinants of poor sanitation. Evidences of effects of poor sanitation have also been discussed in this section where more light was thrown on health, economy, education and the ecosystem. Last but more importantly, the review showed avenues to environmental sanitation management where greater emphasis was laid on regulatory interventions such as the establishment of sanitation laws, rules and regulations (bye-laws) and behaviour interventions such as a positive change in mindset, attitudes and behaviour of people.

Notwithstanding, a number of literature has also disclosed the inevitable influence poor sanitation may have on the health of people. The review therefore indicated that the effect of sanitation on people's wellbeing especially one relating to their health is not invisible or one-sided but rather a two-edged sword. This shows that research on the subject of sanitation vis-à-vis health, is not conclusive. This is therefore a notification enough for further research into the subject.

CHAPTER THREE

METHODOLOGY

3.1 Overview

This chapter discusses the research methodology. It describes in detail the research design used, the study area, the population involved in the study, the sample and sampling procedures used. It also highlights the data collection instruments and the procedures involved in the collection of data likewise its analyzed.

3.2 Research Design

Research design is a blue print specifying how data relating to a problem should be collected and analyzed. According to Gay (1992) research design indicates the basic structure of a study, the nature of the hypothesis and the variables involved in the study. Because the overarching purpose of this research was to explore the causes (determinants) of environmental sanitation condition in Aboabo, investigate their effects on the health of the people and find out interventions that could help ensure good environmental sanitation in Aboabo, descriptive research design was adopted. The descriptive research design was adopted because it allowed for the phenomena to be observed and studied in their natural settings. That is, it presented a snapshot of the current status of sanitation and health among residents living in Aboabo Zongo communities.

In order to achieve the purpose of this study, a case study design was considered ideal from the pool of descriptive research design types. Case study is a form of research that studies characteristics of individual units such as clique, class, school or community. The aim of the design as adopted was to understand through careful analyses people's attitudes towards sanitation and health in Aboabo Zongo

communities. The emphasis was to generate answers to ‘how’ and ‘why’ current state of sanitation, sanitation practices and health are what they appear to be among people living in Zongo communities at Aboabo. Also, the design was considered because it is among the few scientific research types that positions researchers to make use of knowledge application and thinking skills in real situations such as the phenomena understudied.

Furthermore, the rationale behind case study design as employed was not only to delve deeply and examine fully complicated events that constitute life of the unit with the aim of drawing conclusions on the larger population in which the unit forms part of. The design’s suitability to serve both qualitative and quantitative research approaches also played key role in its consideration as far as the study was concerned. The design was more or less flexible because it was not limited to a single source of data. It gave the researcher the platform to collect and analyse all forms of data from various avenues regarding the situation understudied and infer from the data obtained using multiple research dimensions.

Even though case design may be applicable in many situations, nevertheless, Baxter and Jack (2008) suggest that researchers must work within the six main types of case study designs – explanatory, descriptive, multiple-case studies, intrinsic, instrumental and collective, if only they wish to use the design for their study. The study consequently employed the multiple case study design since it was not limited to studying only a single (one particular) phenomenon. The design was employed considering the pluralistic and diverse nature of sanitation and health issues pertaining the people living in Aboabo Zongo communities. Notwithstanding this, it became reasonable that the multiple case design be considered because it stood in a better

position to obtain information via observation, triangulation, focus groups and interviews regarding sanitation and health conditions of residents in the study area relatively at the same time. It gave the researcher the opportunity to study the phenomenon as it existed with other study subjects. This means the selected design offered the researcher to delve deeply to explore views, perceptions, attitudes and certain characteristics that were associated with sanitation practices and health across sections of people living the Zongo communities at Aboabo. It is important to note that the adopted design (multiple case study design) displayed certain degrees of limitation. This included proving highly susceptible to biases as a result of researcher's personal opinions and preferences. This obstacle was addressed by both data and method triangulation. That is, the researcher did not rely on a single stream of data during collection neither did she analyse gathered data using a unilateral approach. She used other data collection methods such as interview guides and checklists, and data analysis procedures to cross-validate the authenticity of the responses obtained and interpreted.

Finally, with regards to the design, the study exclusively adopted the qualitative approach. Since the focus was to explore through in-depth investigations the state of sanitation and health conditions of residents of Zongo communities in Aboabo, it became crucial that a befitting research approach with the tendency to scrutinize and explain phenomena be employed hence the adoption of the qualitative research dimension. Qualitative research approach according Hammersly (2013) as cited in Cohen et al (2018), is “a form of social inquiry that tends to adopt a flexible and data-driven research design, to use relatively unstructured data, to emphasize the essential role of subjectivity in the research process, to study a number of naturally

occurring cases in detail, and to use verbal rather than statistical forms of approach” (p.287).

Considering the fact that the researcher’s interest was not tied to explaining sanitation situations using numbers rather than words, the qualitative approach deemed suitable to be employed for the study. Furthermore, priority was given to the qualitative approach because it has the capacity to generate more in depth, intricate and detailed understanding of meanings, actions, non-observable as well as observable phenomena, attitudes, intentions and behaviours, and these are well served by naturalistic enquiry (Gonzales et al., as cited in Hotta et al., 2008).

Qualitative data aggregates various methods using unstructured or semi-structured techniques. More so, there are some popular methods used in qualitative approaches, such as group discussions, individual interviews, and observations. Moreover, the qualitative approach obtains more detail and greater amounts of information, as it gives the participants free space to explore their thoughts (Richard, 2009). Consequently, the researcher obtained relevant information from participants on the phenomenon under investigation through close participant observation modes and series of in-depth interview sessions made possible with the help of a semi-structured interview guide.

Although the approach has setbacks such as lacking statistical representativeness in terms of data collection form, overdependence on researcher’s experience, among others which apparently cannot be ignored. However, considering the fact that researchers are monumental or active instruments in qualitative research, their knowledge, skill and experiences are vital in the interpretation of the research process. This therefore was the position of the researcher as far as this study was

concerned. Again, since the aim of the study was only to explore sanitation issues pertaining to a defined population and not to generalize the phenomenon to a larger group outside the defined population, the argument of statistical unrepresentativeness can still be nullified.

The active role of the researcher in this study which involved explaining the problem identified (sanitation) from her perspective and attributing reasons to actions and inactions (sanitation practices) indicates that the study rallies on the social constructivism stand poles. This paradigm stipulates that meaning is created by human beings in the society. Thus, it takes words to explain human behaviour and attitudes.

3.3 Population

Population is the group of interest to the researcher (Frankel & Wallen, 2002). It is the group about whom the researcher would like to generalize the results of the study. There are three actors in environmental sanitation management. The target population was made up of all the three actors in waste generation in all communities in the Ashanti region of Ghana. These generators comprised households, business and government institutions; service providers which comprised private waste management companies and waste managers. The accessible population however was composed of households, small scale business institutions and government institutions (The Environmental Protection Agency and Health and Sanitation Inspectorate); service providers and waste managers (private waste management agencies – Zoom Lion Company Limited and tricycle dispatchers) in Aboabo Zongo communities in the Asokore Mampong Municipality in the Ashanti region of Ghana.

3.4 Sample and sampling technique

Sampling is the process of selecting units of people, organisations from a population of interest so that studying the sample will fairly generalize our result back to the population (Creswell & Hirose, 2019). The sampling procedures used were explicitly non-probability. In a non-probability sample, the chances of members of the wider population being selected for the sample are unknown. The researcher deliberately or purposely selects a particular section of the wider population to include in or exclude from the sample.

The convenience and judgemental sampling techniques were employed under the non-probability sampling procedures.

The convenience sampling technique is the process of choosing study subjects based on accessibility and proximity. This technique was used to include all households, small scale business enterprises and government institutions in the Asokore Mampong Municipality in the Ashanti region. The technique was deemed ideal for the study since the focus of the study was not entirely about measuring discrete characteristics of respondents. The technique therefore paved all respondents who in the municipality irrespective of sex, profession or household status. In using convenience sampling all households and individuals in the Aboabo Zongo were assumed to have similar experiences. Therefore, households and individuals who were available and willing to participate in the research were selected without discrimination.

The researcher used purposive sampling technique for the final selection because time available was limited, new data failed to bring additional information to the research questions, and he also needed to amass as many comprehensive evidence

and information as possible. In purposive sampling, researchers intentionally select individuals and sites to learn or understand the central phenomenon (Creswell, 2018). This sampling technique was naturally employed in selecting the locality or area in the municipality where the situation mostly pertained. Thus, it was used to select Zongo communities in Aboabo a suburb of Asokore Mampong Municipality. The selection of certain respondent categories such as service providers and waste mangers also underwent same mechanism. The judgemental also known as the expert or purposive sampling technique can be seen as a way of deliberately selecting respondents out of certain characteristics they possess. The employment of this technique lies in the premise that it is ideal when researchers wish to identify and select individuals or groups of individuals that are proficient and well-informed with a phenomenon of interest. This sampling technique was used to choose respondents who were privy to sanitation issues in the study setting.

3.5 Sample Size

Since it was practically impossible to consider all elements of both target and accessible populations, it was necessary to obtain a sample that would fairly be a representative of the entire population. Sample is the selection of respondents in such a way that they represent the total population as good as possible. It is also a small subset of a population said to be representative enough of the total population.

The sample size for the study was twenty (20). Some general rules of thumb for Large Enough Sample Condition were considered in the determination of the sample. The sample size was chosen because the population had a normal distribution. This implies that the chosen sample and the large population virtually bore same characteristics. Again, since time available was practically limited, sample

size estimated at twenty (20) in a qualitative study was ethically and statistically appropriate. Again, Cohen et al (2018) maintain that one respondent is representative enough in a case study. Last but more importantly, the determined sample size was also influenced by the purpose of the study. Since the aim of the study was necessarily not about generalizing to the larger population, deciding on a sample of twenty (20) became needful.

Ten (10) households and five (5) small scale business institutions were conveniently sampled. Each household was composed of four (4) members (respondents). Nonetheless, two (2) service providers (one private-owned company and one public/state-owned company), two (2) government institutions (Environmental Protection Agency and Health and Sanitation Inspectorate) and one (1) waste manager (The Asokore Municipal Assembly) were purposively selected. Below is a tabulation representation of the sample or respondent distribution:

Table 3.1: Sample size (participant) distribution

Category	No. of resp. (f)	Percentage (%)
Household	10	50
Small scale business enterprises	5	25
Government institutions	2	10
Service providers	2	10
Managers	1	5
Total	20	100

Source: Field Data, April, 2021

3.6 Sampling procedure

The study subjects went not taken through any rigorous selection procedures entirely. Nonetheless, with the assistance of the Google GPS map reader, houses within a radius of 500 meters were sampled, and participants (household members)

were selected from these houses. This map application could automatically read and calculate distances and spaces between buildings (such as houses) in meters and kilometers. The measurement on the reader was subsequently used in the process of the house and household identification. In a serpentine order, houses in the demarcated area that had the specified household membership composition were listed and given unique codes.

Households were continually sampled until a saturated point was reached within the demarcated area. Characteristics of household members were not necessarily the focus but once a household was up to the composition which is four members, it was considered. The same procedure was used in choosing respondents from the small scale business category. Individuals who operated businesses within the same radius were sampled. This included food vendors, fabric dealers, mobile money vendors, mechanics, fashion designers, and among others. Although these respondents were conveniently identified, only those who agreed to take part in the study were contacted for further discussion.

Likewise, respondents sampled from the categories of government institutions, service providers and managers also did not succumb to any definite form of selection procedure. Instead, they were handpicked in the process of selection because of their exposure in the phenomenon understudied. These experiences, knowledge, expertise and other related characteristics proved useful in the course of the study hence their selection. In this regard, in the area of service providers, two respondents comprising one (1) respondent from the Zoom Lion Company Ltd. (public) and one (1) tricycle rider (private) who is into waste disposing venture were purposively selected. The category of government institution also had two (2) respondents judgementally

sampled, one from the Environmental Protection Agency and the other from the Sanitation and Health Inspectorate in the Asokore Mampong Municipal Assembly. Last but more importantly, in relation to waste management category, a representative from the Office of the Municipal Chief Executive was purposively selected.

In all, a total of twenty (20) respondents were sampled from the Aboabo Zongo communities in the Asokore Mampong Municipality. The categories of respondents were households ten (10) households, five (5) small scale business institution; two (2) government institutions, two (2) service providers (one private; one public) and one (1) waste manager.

3.7 Research Instruments

The instruments used were semi-structured interview guide and observation guide. Unlike some studies where interviews are used as supplementary or complementary data collection tool, this study exclusively made use of interview guide in a quite distinct way. That is, it was not only used to triangulate or confirm responses gathered from the questionnaire, it was also employed as a solitary instrument in the gathering of information relating to all the five (5) stated research questions.

The interview conducted was in-depth and semi-structured in nature. The aim was to find out the nature of environmental sanitation situation, root causes of poor sanitation, how poor sanitation affect health of people, nature of interventions embarked by the district assembly in solving sanitation problems as well as best practices in sanitation management that can help improve health of people in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis. Realistically, the researcher confined to the use of semi-structured

interview guide in gathering data from respondents because of its flexibility. The instrument gave respondents the opportunity to freely express their opinions in diverse ways. The interview guide development was influenced by Shared Sanitation Interview Guide – Ghana.

Close participant observation guide was another utilized tool in the data collection process. Observation primarily deals with employing vision or sight to gather relevant information to explain the nature, occurrence or trend of a phenomenon. It provides primary data that fit carefully into a checklist that the researcher has designed. Without checklists, observational activities become highly impractical. This instrument was used explicitly to triangulate responses obtained from interviews. In other words, it was employed to confirm information gathered on some particular research questions especially research questions one and two. Observation guide as a tool was used to find out the nature of environmental sanitation and the root causes of poor environmental sanitation situation in Zongo communities in Aboabo in the Asokore Mampong Municipality in the Kumasi Metropolis.

3.8 Trustworthiness of Instrument

Qualitative study researchers tend to avoid the terms validity and reliability of instrument but instead ascribe to the terms consistency or trustworthiness of instrument to refer to the former terms. Validity, in the opinion of Cohen, Manion and Morrison (2003) as cited in Agyeman (2016) and Impraim (2014) is very necessary as far as research is concerned, and it is grounded in the assertion that a particular instrument measures what it claims to measure. Copies of the instrument were given to two of my M.Phil colleagues, friends at work and my supervisor to

check for content validity and face validity to ensure that it solicited the information needed. Their suggestions were used in producing the final instruments.

Reliability simply implies that scores from an instrument are constant and consistent (Cohen & Morrison, 2018; Suen & McClellan, 2003). Scores should nearly be the same when a researcher administers an instrument on a number of occasions. However, in ensuring reliability of instrument regarding the qualitative aspect of this research, the researcher used the same semi-structured interview guide, observational guides and questionnaires for all respondents. The same questions in the interview guide were posed to residents as recommended by some writers (Anderson & Morgan, 2008). The researcher used fifteen (15) residents from Tafo Zongo communities who fell outside the study but had the same characteristics as the study subjects. After a couple of weeks, the same group were given the same instrument to respond to.

3.9 Ethical Consideration

Ethical considerations are very crucial when one is undertaking a study involving human beings (Goddard & Melville, 2001). It is vital for the researcher to come out with a study which also demonstrates principles of integrity, respect for persons and justices. The researcher believes that research contributes greatly to existing scientific knowledge and that human and technological developments are embedded in this sort of knowledge. It is acknowledged that social science research should show a relatively promising impact on the livelihoods of people.

In order to deal with ethical problems in research, Cohen et al (2018) write that the researcher must establish clearly the purpose of the research to the participants. The researcher must as well inform participants of dangers if any,

making sure that they are in the position of making their own decision, if not, have someone consent to their participation. Nevertheless, participants must be given the mandate to decide whether or not they wish to be part of the study (Cohen et al., 2018). In addressing the above concerns and suggestions raised, the researcher embarked on the following in order to deal with any ethical concerns that may arise:

3.9.1 Permission

The researcher obtained an introductory letter from the Department of Social Studies Education of the University of Education, Winneba which enabled her to seek permission and approval from the Assemblies to conduct the interview, administer questionnaire and carry out observation in the study area. The researcher also established a cordial relationship with staff members of the Assemblies, household members, business men and women, members of government institutions and some service providers such as the tricycle riders in the various Zongo communities in Aboabo in Asokore Mampong Municipality in the Kumasi Metropolis, thereby acquiring the essential assistance and support needed to carry out the research.

3.9.2 Confidentiality

All respondents were promised confidentiality both in written and verbal terms. As a sign of safety measure, they were required not to disclose their names during the interview session. Respondents were also assured that their responses and the information they provided for the research would forever be confidential and anonymous.

3.9.3 Consent

Written consent were issued to respondents to sign. Consents for households were issued through the household heads. The consent was obtained voluntarily

without compulsion, intimidation or enticement. The aims, methods and duration of the research were explained to the respondents. See Appendix for the consent form.

3.10 Data Collection Procedure

The researcher secured an introductory letter from the University of Education, Winneba through the Department of Social Studies seeking permission from the Kumasi Metropolitan Assembly and the Asokore Mampong Municipality to conduct the study in Zongo communities in Aboabo. A sketch map of the study area (Aboabo) and a compiled list of approximately the total of number houses in the Aboabo community were obtained from the Asokore Mampong Municipal Assembly. These documents were released not only as a result of the introductory letter alone but also through the friendly rapport that was established between the researcher and members of the Assembly.

A convenient time was arranged for the commencement of the study. On the appointed date, the researcher, her team and a volunteered staff from the Asokore Mampong Municipal Assembly initially embarked on listing exercise where small scale business enterprises, houses and households were given unique identifications in the communities. Residential addresses were used for coding all houses listed whereas households, household members and small scale business enterprises were identified with the uniquely generated codes. This was executed in a serpentine order. Residents (respondents) were informed about the purpose of study and were entreated to cooperate upon subsequent visits.

Subsequently, visits were made to the households and small scale businesses in Aboabo to observe the nature of sanitation in the area. The findings of the observation were ticked against a check list (See Appendix C). The observation

checklist and the questionnaire were developed based on the literature and the objectives of the study. The two sets of instruments were personally administered to all these categories of respondents; households and small businesses.

An appointment for interview was booked with some categories of respondents. In-depth interviews were granted mainly to service providers and waste managers. With regards to service providers, tricycle riders who are into thrash and garbage ventures and the Zoom Lion Company were interviewed. Scheduled interview sessions were also arranged for the staff of Kumasi Metropolitan Assembly and the Asokore Mampong Municipal Assembly. Notwithstanding this, some selected small scale business men and women, household members and members of government institutions were as well interviewed to ascertain their views regarding the nature of sanitation in Zongo communities in Aboabo. The questions and discussions in the interview referred to experiences within this module and sought to identify the causes and effects of poor sanitation, in addition to covering the benefits that they gained and lessons they learned through good and poor sanitation practices. Moreover, information about how respondents viewed their role in poor sanitation was gathered.

3.11 Data Analysis

Descriptive statistics was used in analysing the data. Data were qualitatively analysed. Thematic analysis, table with descriptions and data triangulation were used in analyzing data gathered through qualitative means.

3.11.1 Data Analysis Procedure

Detailed notes and verbatim representations of respondents' views were taken in the course of the interviews, tape and video recordings gathered from both

observation and interview sessions were played repeatedly for clarity purposes. These data were subjected to careful transcriptions where codes were generated for respondents, responses and observed behaviours afterwards.

During the analysis phase, the analytical tools and procedures that were involved did not differ much from one research question to the other. Thematic analysis was used to analyse research question one and research two. It was used to find out the root cause(s) of the poor environmental sanitation situation and illustrate the nature of environmental sanitation situation in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis. Thematic analysis is a form of qualitative analysis which comprises recording or identifying passages of text or images that are connected by a common theme or idea allowing one to index the text into categories and therefore establish a “framework of thematic ideas about it” (Mountain, 2014 cited in Agyeman, 2016). This procedure focuses on pinpointing, examining and recording patterns or themes within data. Mountain (2014) in Agyeman (2016) argues that thematic analysis is easy, simple and flexible since it does not limit researchers’ choice of theoretical framework. With reference to research question three, data triangulation was adopted. It was used to ascertain the effects of poor sanitation on the health of people in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis. Triangulation simply implies employing multiple techniques to obtain information on the same topic. This is basically a way of ensuring the validity of research via the execution of different approaches to gather data on the same topic, which involve different types of samples as well as methods of data collection (Kulkarni, 2013 as cited in Mountain, 2014). Triangulation is not meant to endorse and cross-validate data gathered but rather to describe other aspects of the same phenomenon (Agyeman, 2016)

In order to assess the nature of interventions that are embarked by the Assembly to solve the sanitation problems at Aboabo and as well explore the best practices in sanitation management that could improve the health of the people in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis, table with descriptions was used. This procedure was employed in targeting research question four and five respectively. The researcher transferred final concepts and categories into a data table. She listed the major categories, then explained them after the table.

3.12 Study Area

The Asokore Mampong municipal is one of the 260 Metropolitan, Municipal and District Assemblies (MMDs) in Ghana and forms part of the 43 MMDAs in Ashanti Region of Ghana. The municipality was carved out of the Kumasi Metropolitan Assembly in 2012. The administrative capital is Asokore Mampong. The Municipality shares boundaries with the KMA to the east, south and west and to the Kwabre East and south to the north. The Municipality covers a total land area of 23.91km². It is located in the north-eastern part of Kumasi. The Ghana 2021 Population and Housing Census recorded a population growth of 469,249 for the municipality, an 8.68% population growth rate (Ghana Statistical Service, 2021). This constitutes 244, 948 (52.2%) females and 224,301 (47.8%). The total population density of the Municipality stands at 19,552 persons per sq.km (469,249/23.91490) whereas the total household population was ascertained at 304,568. (Asokore, Mampong Municipal Assembly, 2021). Asokore Mampong Municipality has an average household size of 4.2. This implies that on average there are four (4) people in a household.

Map of Asokore Mampong Municipality

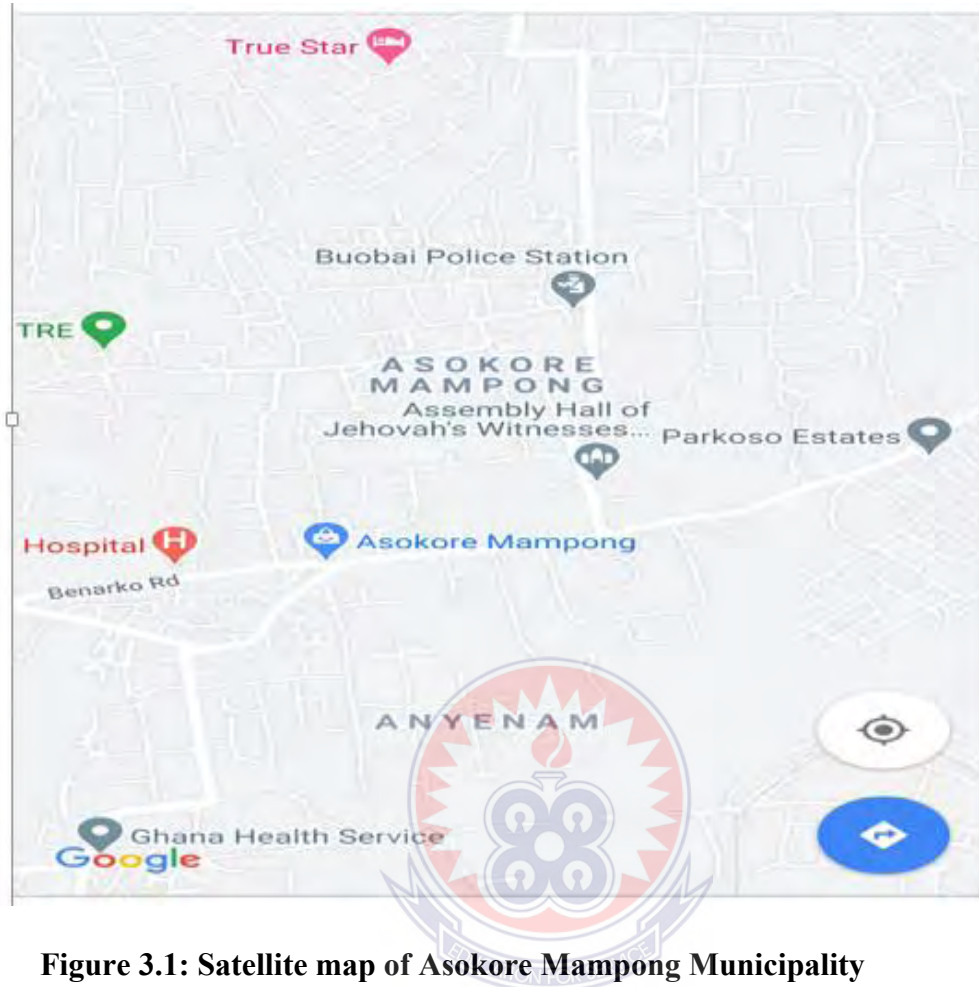


Figure 3.1: Satellite map of Asokore Mampong Municipality

Source: www.google.com/maps

Map of Asokore Mampong Municipal



Figure 3.2 District map of Asokore Mampong Municipal

Source: Ghana Statistical Service (GIS), (2021), 2020 Population and Housing Census.

3.12.1 The Aboabo Community

The study area, Aboabo is about 5km and 5 minutes-drive from the Municipal capital. It has an estimated population of about 44,276 consisting of 37,776 household population, 9,444 households and 830 housing facilities (Dakpallah, 2011). For this study, Aboabo, an electoral area in the Asokore Mampong Municipal Assembly of Ashanti Region was targeted. In a recent environmental ranking conducted by Kumasi Metropolitan Assembly (KMA), Aboabo ranked last out of the total 10 electoral areas in Asokore Mampong Municipal Assembly (Danso, 2018).

Satellite Map of Aboabo

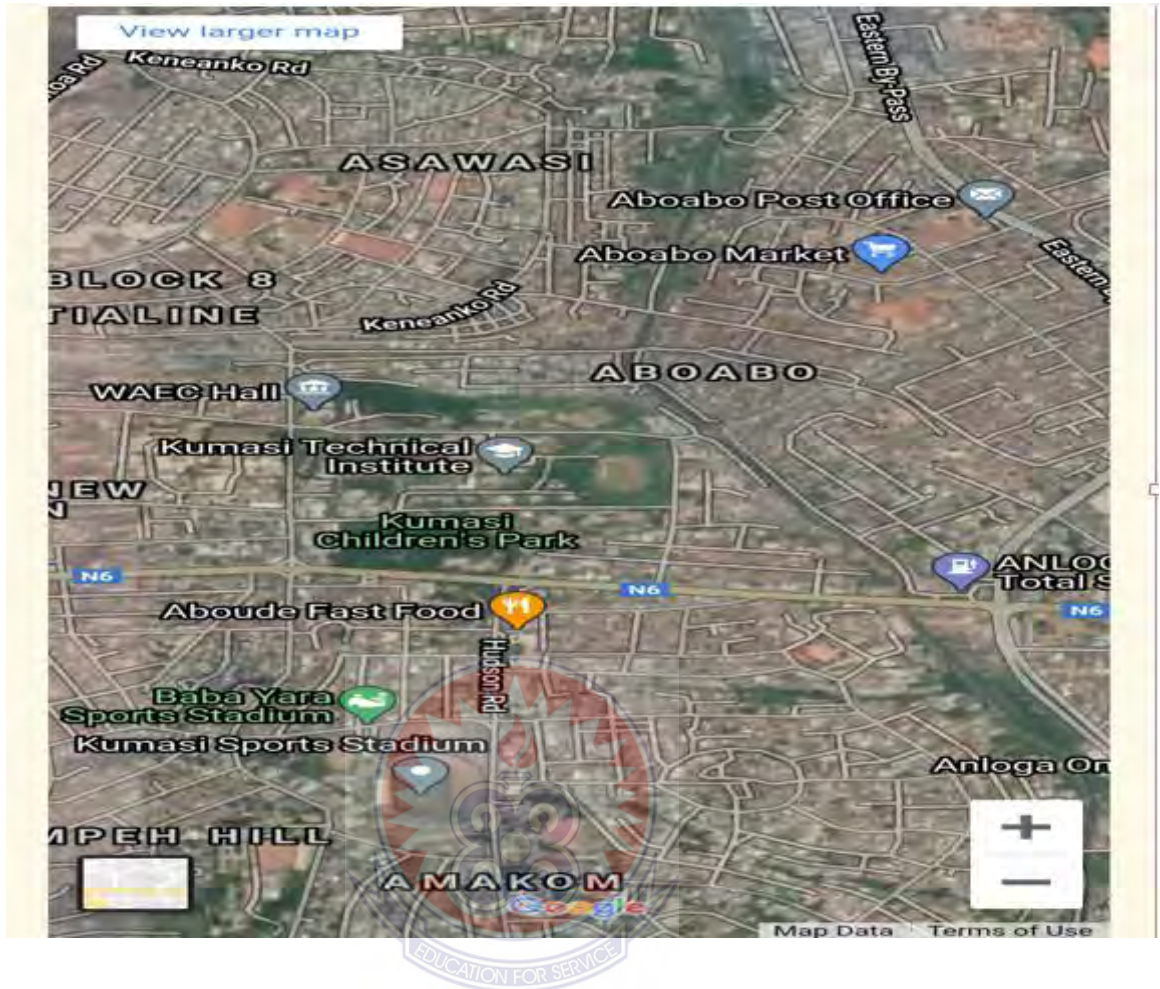


Figure 3.3 Satellite map of Aboabo

Source: Map Data.com (2020)

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1 Overview

This chapter presents the data gathered for the study together with the corresponding discussions of findings. Data obtained through the administration of questionnaire, interview guide and observation protocol were statistically and thematically analysed respectively. The results of the findings are outlined under the following themes:

1. Demographic information of respondents
2. Analysis of interview
3. Analysis of observation
4. Summary of analysis

4.2 Analysis of interview

Research question 1: “What is the nature of environmental sanitation situation in Aboabo Zongo communities in Kumasi?” Participants were interviewed to express their views regarding the status of environmental sanitation in the area. The nature of environmental sanitation was broadly discussed within three (3) domains namely water; drainage, sewage and solid waste system; and toilet, lavatories and urinal systems. In analyzing this, a thematic network was designed to graphically simplify the tenets of the nature of the phenomenon in the study area.

Nature of environmental sanitation

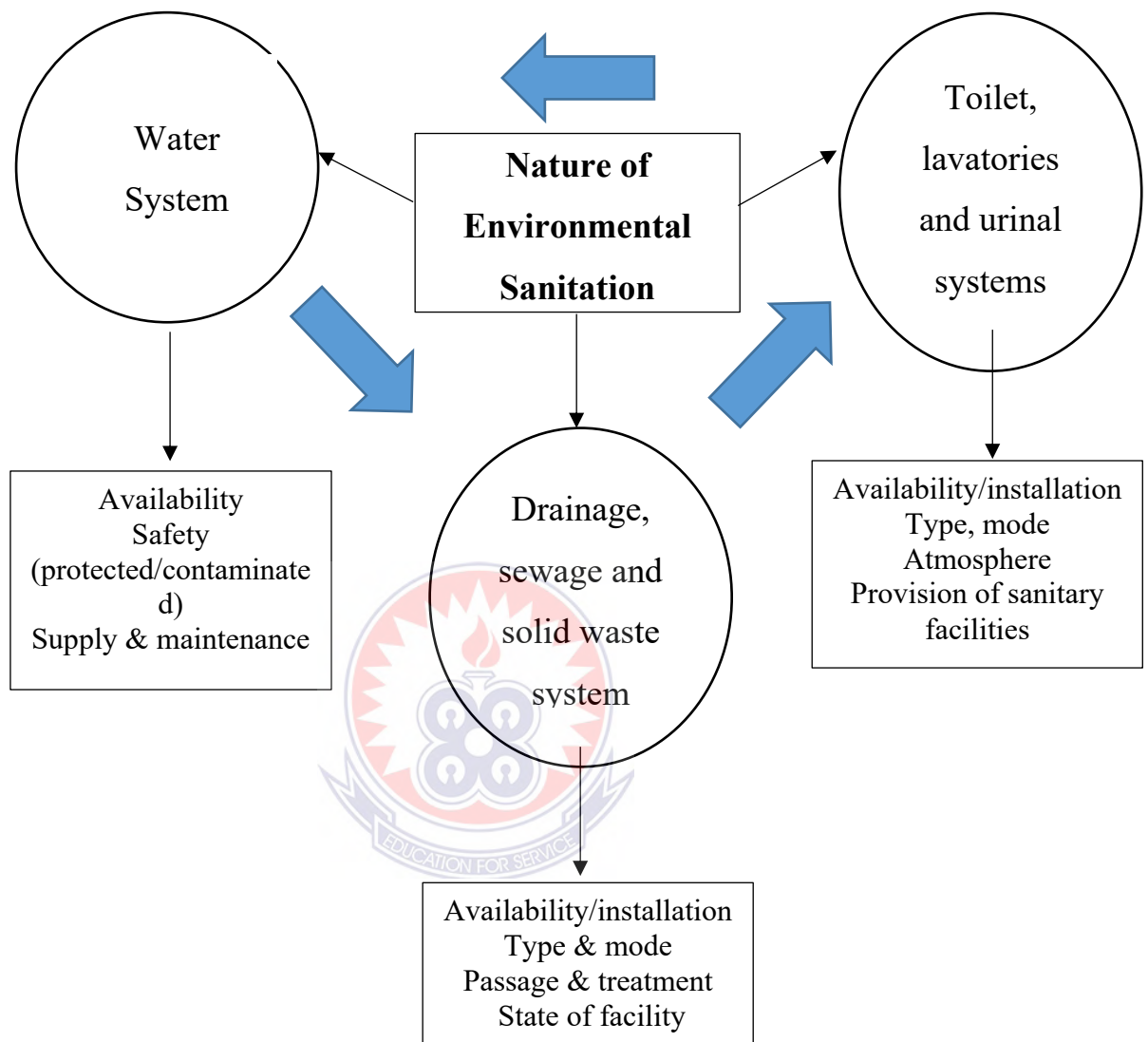


Figure 4.1: Thematic network showing nature of environmental sanitation in Aboabo Zongo communities

Source: Author's IDI Qualitative Data, July, 2021.

4.2.1 Water System

Water system (WS) as a domain against which the nature of environmental sanitation was measured and interpreted had three scopes of measurement. That is, water availability, water safety and water supply and maintenance. Water availability

referred to the presence and readily access to water source. Water safety basically encompassed the protection and contamination of drinking water and water source. Water supply and maintenance pointed to the provision of water by public utilities, commercial organisations, community efforts or by individuals, usually through a system of pumps and pipes as well as the treatment administered to improve the quality of water to make it appropriate for a specific end-use.

4.2.1.1 Water availability

It was evident through participants' responses that access to water supply in the communities is easy and readily available for use. Interaction with some members of the communities revealed that residents and business operators do not face any difficulty accessing water for their activities. It was however realized that some few locations within some particular communities lack access to water supply and as a result have to resort to relatively walking distances to get water. Participants went further to disclose reasons behind water shortages in some households and communities. When participants were asked about water availability in the communities, this is what a section had to say:

HWA1: "Oh...yes! Every house in this area has running water. It is either pipe or well. I think there are only few houses around here that do not have their own pipe. People living in such houses fetch from nearby houses." – (Household member)

HWA4: "Although I can't speak for every house in this community but there is one thing I that I know for sure. Almost every house that I have entered has water. It is either a tap flowing or...ehh (interviewee stammers) there is a mechanized well. However, there still remains instances where houses get disconnected from water supply because they have accumulated water bills to pay. Such phenomenon is not rare among some particular communities. So anytime you see people walking meters to fetch water in this community, it is partly because of that." – (Household member).

BWA1: *“As you can see...erhmm...there are a lot of shops, salons, containers and eating places around here. (Cars honking) Myself and others, we have pipes connected to where we work which flows all the time making our very business lives much more comfortable. Customers do not go through stress just to clean themselves. Erhmmm...salons have water sinks installed where clients’ hairs are well treated. Equally, restaurants have their ways of addressing water issues with their customers (interviewee coughs). And...yes, of course, hardly, do we struggle with water access. Nonetheless, there are few moments where access to water gets more challenging (a customer intrudes). That is when there is a zonal or regional maintenance on water supply systems. Many a times too, accidents occur where you see trucks running over main pipelines damaging them. Hahaha...!! Lastly and apparently, when we owe Ghana Water Company, you know, they have no other option than to disconnect us from their grind (laughs).”* – (Business operator).

The responses ascertained suggest that measuring the nature of the environment from the circus of water system particularly from the angle of water availability can be said to be unproblematic since residents are not faced with any form of water crisis.

4.2.1.2 Water safety

Participants pointed out that water supplied are always safe for drinking and for other purposes. To some sections of them, they believe that running water are not contaminated but are rather always safe for drinking since they are treated from source. Others also claimed that they have their own means of protecting the water they fetch. However, few were of the view that activities of some people pollute the water they drink and use for several other purposes. Some also said the lack of water storage facilities as well as the state of some water storage spaces leave a lot to desire in terms of how safe water are for all manner of purposes. These are sampled experiences of respondents when they were asked about the safety of water in their households and communities:

Hws6: *“Our water is all the time clean because it comes from source. That is, GWCL which of course...eerrhh...we all know that it is safe for all domestic purposes. So I don’t really think it’s necessary for anyone to feel unsafe using such water. Again, we are Muslims, we*

believe prayer works so we pray over our water believing that it's safe for us to use.” – (Household member).

Hws3: “Usually, the water we use here are safe all the time because it is supplied by GWCL. Besides, we also use naphthalene balls in some of the water we store in our firmly covered barrels. But in the event that there are some maintenance works to be done and the tap stops flowing for some time, hmmm...my sister..., that is where the issue is. You go to some places to fetch water, and what you will see will just put you off. The same water source, car washers are there, those doing laundry, not to talk off children who accidentally piss along the banks and thresholds of the water sources. You come back home, and realize that the water has taken on slippery texture, funny smell and taste making it unsafe for neither cooking nor drinking” – (Household member).

Bws1: “For me, I don't reside here but this is where my container is. Although I have a connected pipe inside here as you can see but there are times I see and feel that the water flowing is not as safe as it should be. Many a time, you will turn on the tap and the water flowing has changed colour. My dear, no rationale human being will go ahead to drink or use a colourful water no matter how in need you are of it. At times too, you go to other places to fetch water especially those mechanized wells and those connected to tanks, you take a look at these tanks and wells...oh my God...!! Only God knows when last they were cleaned but people are still drinking from these sources. At other ends too, they have corners where they store water but you get there where the containers and basins are not properly covered or not covered at all.” – (Business operator)

The responses gathered suggests that water supply in the Aboabo Zongo communities is clean and safe for drinking even though there are times that the safety of flowing water is questioned.

4.2.1.3 Water supply and maintenance

Participants disclosed that they have various water supply sources. They revealed that they do not only depend on the mainstream supply but there are other several sources where they get water. Responses gathered from the interview showed that water supplied to members of the communities are not only done by the Ghana Water Company Limited (GWCL); however, there are also individual members who are also into water supply businesses who distribute water to houses, households, businesses

and communities members in times of water shortage. It was also realized that a section of members preferred patronizing the services of private suppliers to GWCL.

In relation to water maintenance, it was seen that participants did not have adequate knowledge about when and how maintenance works on water supply are carried out. To a section of them, they have no idea whether or not maintenance works are frequently done. Nonetheless, only a handful of respondents asserted that maintenance culture on water supply is as effective as it can be. They claimed that public and official communiques are often given to the public alerting them on impending maintenance works on water supply. These are samples of what participants had to say in the interview when they were asked about nature of water supply and water maintenance cultures in the communities:

HWSM2: *“I don’t usually rely on Waterworks for water supply. I also have people I buy water from. There are water tankers around that a lot of us here largely resort to anytime there is water crisis in the city.”* – (Household member).

BWSM3: *“I hope you came across people fetching water in open spaces. It is common here...people have mounted water tanks and mechanized pumps, and that is where people like us who do not have access to the mainstream supply buy our water from. In fact, it is much more dependable than the ones (water) supplied by the Ghana Water so many of us opt to buy from them all the time than to stay connected to the mainstream supply and pay monthly.”* – (Business operator).

HWSM4: *“Honestly, I have no clue as to when and how they do repairs on the water we drink. For me, I don’t think they do any maintenance works on the water supplied to us. All of a sudden, the tap stops flowing and the next second, you see filth in the running water. That doesn’t look like repairs or maintenance to me.”* – (Household member).

BWSM1: *“For me, I know that at least GWCL often do some repairs and maintenance works on their water supply systems. Many a time, they announce it on radio stations or send notices via WhatsApp, Facebook and other social media outlets that there would be impending or intermittent cut in water supply in some areas for a certain period after which that taps will flow again as soon as those maintenance works are done. More to this, there are instances where*

you normally see GWCL workers attending to main pipelines in the middle of highways. So I know that maintenance culture is very effective.” – (Business operator).

4.2.2 Drainage, sewage and solid waste system

Drainage, sewage and solid waste system (DSSWS) was another domain within which the nature of environmental sanitation was explored in the study area. It was measured through the following indicators: availability and or installation of facilities, type and mode of facilities, passage and treatment of facilities as well as state of facilities. In other words, participants were enquired about the availability, design and nature, treatment and current status of drainage, sewage and solid waste systems in households and communities.

4.2.2.1 Availability/installation of facilities

Participants asserted that in some communities there are singly dug out drainages where waste water from almost every house are channeled into whilst a section of them claimed that they have such facilities installed in their various homes that take care of their waste water. However, it was noticed that in communities where drainages and sewerages are absent, residents resort to open spaces such as the streets in dealing with waste water. In relation to solid waste, it was found out in the interview that members of the communities rely on the limited resources provided to treat or manage solid wastes. They revealed that not all communities have solid waste collection containers and bins installed. To them, since they are inadequate and as a result do not have the capacity to accommodate solid wastes that have generated across places, some residents seize this an opportunity to make use of open spaces and drainages as places to dispose their solid wastes. Participants shared their experiences in these regards:

H_{DSA7}: *“There is one big gutter down here. That is what we all use to get rid of the water we use in our various houses. I can say that we are fortunate to have such a drainage otherwise because if it were constructed, we would also have to be messing the bare grounds, passages, floors and any other open spaces with waste water the same way some people are doing in other places. You see, when you visit some areas here, it becomes very difficult to roam freely because the people over there, after cooking or whatever activity that might be, come outside and throw the water used on the floor. You cannot blame them that much because they do not have any gutter installed either in their community or in the house.”* – (Household member).

H_{DSA4}: *“We always come outside to pour waste water. No, around here, we don't have any gutter to channel our used water so we always pour them in the streets. Honestly, we don't know when and how this practice will stop.”* – (Household member).

B_{DSA1}: *“To be very frank with you, dear sister, dustbins provided to collect garbage here are not enough, they are very few. This area for example, is a heavily dense area, a lot of people and businesses are here. Can you imagine? From this stretch to the other, it is almost a mile, there are only three dustbins provided. Do you have any idea the number of houses over here or there? Not to talk of containers installed around the corners! I can say that this to some extent explains why some of the people around tend to exploit the gutters with rubbish. Others also get frustrated to the point of throwing their garbage around any open spaces they can get especially when people are not looking around. But I think the waste disposal in gutters tend to be very common in places where dustbins and waste containers are not many”* – (Business operator)

The gathered responses indicate that one can examine the nature of sanitation from facility availability. The responses ascertained suggest that not all communities have drainages to channel their waste water, and existing drainages are not treated well because of inadequate solid waste collection bins installed in the communities.

4.2.2.2 Type and mode of facilities

Limited variations in drainage, sewage and solid waste systems were identified across communities. Generally, two major forms of the drainage and sewage facilities were spoken of by participants whereas solid waste systems varied to a definite extent. It was found out that drainage and sewage systems were either covered or open but the

uncovered or open drainage and sewage facilities appeared to dominate in households and communities alike. Participants disclosed that the overt nature of these facilities because in their view they are prone to unpleasant smells, insects and as well promote the haphazard disposal of refuse in them.

A section of participants however expressed their dissatisfaction over the covert nature of some of these facilities claiming that they easily get choked when they are covered. It was also revealed that solid waste system largely encompassed plastics, papers, electronics, food wastes among others; however, plastics apparently seemed to common among solid wastes generated. Participants asserted that majority of solid wastes generated in households and communities are from plastic bags and plastic bottles. When participants were asked about the nature and type of drainage, sewage and solid waste systems, this is what one participant had to say:

H_{TMF2}: “Only few gutters are covered in this neighbourhood. Almost all gutters are open. I think the uncovered nature of these gutters breed mosquitoes which is not good for our health at all. You cannot even come out at night to sit and think in peace because of the army of mosquitoes that will be hovering on the surfaces of these gutters. As you can see, they are open, and they are constructed stretching right in front of our houses. What worries me the most is the rampant disposal of polythene bags and bottles in our gutters” – (Household member).

Another participant reiterated by stating that:

H_{TMF4}: “I think one can count the gutters and drainages that are covered in this area. Open gutters everywhere! For me, this is very bad. People take advantage of their openness and dump in them their heaped garbage. It is common here. Besides, there are events when one finds it very difficult walking pass these gutters because of the pageant smell and the things you are likely to see sailing in them. As for plastics...hmmm...madam, ‘don’t go there’! What? Rubbers everywhere in the gutters. At times, you see all sort of refuse – food leftovers, cables, water bottles, I don’t even know where some of them come from.” – (Household member).

B_{TMF2}: *“There are about two gutters that are covered at where my shops are. Only God knows what will happen when it rains. They easily get chocked, and it takes ages lifting the lids to clean them. Some do not even have lids but concrete coverts. How do we deal with such mode of drainage system? As we speak, there are filth chocked inside. We only pray it doesn’t rain lest the whole area, from the streets to houses get flooded. Just take a look around! Polythene bags, plastics, bottles everywhere. They are the reasons why our gutters are getting chocked like that!”* – (Business operator).

4.2.2.3 Passage and treatment of facilities

Participants disclosed in the interview that drainage and sewages in some houses and communities are almost always stagnant. Waste water do not flow freely because of the filth trapped in them. Others also claimed that landlords do not usually engage the services of experts in the construction of proper drainages and sewages, and as a result poorly dug out drainage systems are installed making it difficult for waste water to flow freely. It was also noticed that waste water passage in drainage and sewages proved a bit of a challenge because many homes in the communities have bathhouses and kitchens without drainage systems. Participants mentioned that only few constructed household and community drainages are often flowing freely linking to main drainage and sewage. It was also found out that drainages and sewages in some house are regularly tilted by household members whilst the communities are rare among community members unless the Assembly intervenes. Below are sample experiences shared by participants in relation to this phenomenon:

B_{PTF1}: *“Take a look at this gutter opposite my shop. It has always stayed like this since I moved in here. No one knows where it is going or coming from. It has always been still; it does flow at all. You see the problem some us are facing here, and neither the authorities nor the indigenes here seem to care.”* – (Business operator).

H_{PTF5}: *“I have always had issues with my own people. You see that house over there? Hhmmm...I don’t know what seems to be the problem in that house! They don’t have any ‘soak away’ or gutter so waste water from washrooms, bathrooms, kitchen are stagnated in a dug pit right behind the house? They can leave this waste water for*

days and sometimes over a week. So you can imagine what this attitude leaves the people leaving around such house.” – (Household member).

Other participants also gave this revelation:

H_{PTF2}: “Not all the gutters are linked to the main gutter. Those that are connected to the main drainage hardly get chocked. The gutters in my house is not linked to the main gutter. Whenever it gets chocked, we deal with ourselves. We have a roaster so each room is aware of the drainage cleaning and scrubbing culture. However, it necessary necessarily not our concern but the Assembly’s anytime the community drainages get chocked or stagnated.” – (Household member).

B_{PTF3}: “People occasionally organize cleaning campaigns, and that is where I normally see them cleaning the gutters. I do not really participate in cleaning exercises especially when it comes to the cleaning of gutters. Honestly, I can’t stand the smell. I think the Assembly have people for that. The only time I took part in a cleaning exercise was two of years ago during the National Sanitation Day. Nonetheless, I decided not to continue partaking in it because of what they had done to the gutters few days after the exercise.” – (Business operator).

4.2.2.3 State of facilities

The present status of drainage, sewage and solid waste systems (DSSWS) was found out not to be in the shape as community members want it according to a section of participants. They believe that some of the facilities are not standing the test of time and are therefore risky. References were made to some particular communities where participants were of the view that nature of these facilities are not in hygienic conditions which eventually put the health of residents and passers-by at risk. Another section of participants shared diverse views in relation to this. They claimed that the state of the facilities are not better than before since there are now installations of such facilities which never existed sometime back. Others also lamented over the abusive attitudes of residents who make use of these community drainages and sewages. They expressed their displeasure regarding the way the drainages are mishandled in the communities leaving settlements in some of the areas at risk in times of rain. Participants had these to say:

H_{SF6}: *“To be frank with you, our gutters are not pleasant at all. You can’t even walk past it. Why? It is very bad!”* – (Household member).

H_{SF3}: *“Although it is not the best but I can tell you that it wasn’t like this before. It is better than some time ago. These gutters you see here were not in place. People threw away their waste water anyhow.”* – (Household member).

B_{SF1}: *“Hmmm...errhmm...the truth must be told, the gutters are not what we want to see. You can’t just look at or inside them. Rubbish engulfing our main gutters and other small ones. Mosquitoes are being bred here and there, the next thing malaria, cholera, typhoid. Our drainages are not the best at all!”* – (Business Operator).

B_{SF3}: *“There are places you cannot visit whenever it rains. The gutters are choked with rubbers and other stuff that they cannot flow eventually causing these areas to flood. If you ask me, if something can be done, it must be done now, for our gutters and wastes are too much to bear.”* – (Business Operator).

4.2.3 Toilet, lavatories and urinal systems (TLUs)

Toilet, lavatories and urinal systems (TLUs) were the last and final domain used to interpret the nature of environmental sanitation in the study area. They were measured against the following indicators: availability and or installation, type and or mode, atmosphere and provision of sanitary facilities. Availability and or installation generally pointed to commonness and accessibility of facilities in the community. Type and or mode referred to the design of facilities whilst atmospheres represented the natural conditions facilities seem to be enduring. Lastly, provision of sanitary facilities focusses on supply of toiletries and other related resources.

4.2.3.1 Availability/installation of toilet, lavatories and urinal systems

It was found out that it was not every house that had TLUs. Participants revealed that many homes in the communities lack places of convenience because they are old homes and structures. However, it was noticed that some homes, business centers and other zones in the communities only have urinal systems installed for interesting reasons. A section of participants on the other hand claimed that the communities

have TLUs installed but they are not adequate enough to serve the entire communities. They expressed their grief over the long queues one has to join in order to make use of these facilities. Others similarly disclosed that urinal systems are not in abundance in many houses and areas in the communities because to them such facilities are not as crucial as toilet and lavatories since they believe that any corner, drainage and open space could easily be turned into urinals.

When participants were inquired about the availability and installations of TLUs, they expressed a relatively convergent views. These are sample responses gathered from participants in the interview in relation to these phenomena:

HATU4: *“In this house? No, we only have where we urinate. There is no toilet here. We all use the public toilet. As you can see, the houses around here are all old buildings. I think that is the reason behind the many absence of closets and other stuff. We have lived and coped with it for ages. We are cool!”* – (Household member).

BATU1: *“I don’t live here but I work here. There are like two public toilets right down across the shop lanes. Only two ooh...! That is not enough! Sometimes you will have to long join queues. The shops around here too don’t have toilets, only few have urinals. So you can imagine the stress!”* – (Business Operator).

HATU2: *“We don’t have many urinals around here but that we really don’t care about that much, for they are not as important as public toilets. As for urinating, it can quickly be done almost everywhere convenient – every corner, gutters or sometimes in open spaces where people don’t usually pass. To get a place of convenience in times of need in the area, that is really a big deal!”* – (Household member).

The obtained responses imply that individuals tend to struggle with exhibiting appropriate sanitation behaviour as a result of absence toilet and urinal facilities in surrounding communities at Aboabo. It appears access to safe and clean toilet tends to relatively scarce in households and vintage areas in communities.

4.2.3.2 Type/mode of toilet, lavatories and urinal systems

The types and modes of TLUs were found out to differ depending on certain household and community characteristics. Largely, two main types of TLUs were identified. They are the exotic (modern) and conventional (traditional) TLUs. The exotic TLUs included flash toilets, lavatories and urinals that are connected to septic tanks whereas the conventional comprised those toilet facilities without water flashing components. Participants revealed that exotic TLUs are mostly found in homes where landlords have money. They claimed however, that in the public domain, such facilities are relatively scarce. This is what a section of participants had to say when probed into the type of TLUs in the communities:

B_{MTU2}: *“We have toilets that one can flash and those that cannot be flashed. But...erhhm...in this neighbourhood, you can only get those without flash. There is a new toilet facility, very nice, but it’s a bit far from here.”* – (Business Operator).

H_{MTU5}: *“Previously, almost every house had its own toilet. Those ones that were manually discharged or disposed in bins. But as you know now, there is no way such kind of toilet facility can stand the test of modern times so there was a need to switch. This was and still is quite costly. So few houses here with owners and relatives abroad and doing better jobs were able to patronize these water closet bowls.”* – (Household member).

Another participant reiterated by stating that:

H_{MTU3}: *“The public toilets we have around here are both water closets and ventilated improved pits. Although there are newly built ones but I think they have been built in political strongholds and zones. We are still using KVIPs whilst those over there are enjoying new water closets and urinals because that is where they get their votes from...hmmm (respondent sighs). Meanwhile, KVIPs are scattered all over here. At least one modern public toilet will do for us!”* – (Household member).

4.2.3.3 Atmosphere of toilet, lavatories and urinal systems

Participants expressed various degrees of worry over the prevailing conditions of some TLUs. They were concerned about odour and appearance of the TLUs. A

section of participants could not hold back their disappointment in relation to the unhygienic conditions some TLUs are being subjected to in households and communities especially the newly constructed ones. These are sample of experiences participants recalled and shared:

H_{At}3: *“My dear, there are times you can’t even look at the toilet much less to think of entering in there to ease yourself. The whole floor is messed with urine, excreta, toilet papers, and so on! Hmmm...this is serious! The smell too, oh my God!”* – (Household member)

B_{At}1: *“The toilet here? Oh no, I can’t! It’s a total mess! Urine all over, cigarettes and smokes, tissues, phlegmy spits. I cannot stand all that so I always keep it to myself and do it when I’m home. Not long ago, I went to the new one hoping that that would be cool...heerrhh...when I got there, I could not tell the difference between the old facility and where I was. So I had to leave and come back to my shop. Even when I came back, odour had taken over me as though I had used the place.”* – (Business Operator).

H_{At}2: *“We are doing our best to make our urinals and toilets clean but the moment you clean it, another idiot will come and mess it up. So some of us have given up, we are all in it. If you have the courage, you can go in there and ease yourself. Otherwise, you find other alternative which is either you do it in the gutters outside or any corner where no one will see you.”* – (Household member).

4.2.3.4 Provision of sanitary facilities

A section of participants said sanitary facilities such as toiletries are rare in community TLUs. They claimed that at the public places, facility attendants only provide an aspect of toiletries at a fee. Any other sanitary facility should be borne by the user. It was also found out that sanitation facilities varied across households. Participants revealed that in some houses toiletries are provided whereas sanitary facilities tend to be absent in homes where tenants are overwhelming. One participant had this to say:

H_{PSF}7: *“I use the public toilets all the time. The only thing you get is tissue, even with that I buy it. There are no soaps or sanitizers to clean yourself. It is not common here, honestly.”* – (Household member)

Another participant added that:

H_{PSF4}: *“You buy your toilet paper. That is all! When you are done, you come back home or go wherever you want to go and deal with your cleaning. Some of us always have to ask for soap and water from other shops and containers to wash our hands.”* – (Household member)

The nature of environmental sanitation among Aboaboa Zongo communities was measured and interpreted within three main domains with their corresponding indicators. In relation to the first domain which is water system, it was found out that water was not scarce in the communities; nonetheless, the certainty of water safety (WS) and maintenance was still subjected to skepticism among community members. The findings, in relation to the second domain, which is drainage, sewage and solid waste system (DSSWS) revealed that facilities are being overexploited in the communities because they have been limitedly installed and by virtue of their design. The responses gathered on toilet, lavatories and urinary systems (TLUS), which is the third domain, showed that provision of sanitary facilities is inadequate and also only certain components of TLUS are available in houses and communities. The findings also revealed the displeasure of community members towards the prevailing conditions of some TLUS in the community.

The findings align with Danso (2016) who outlines these to depict that state of sanitation in both urban and rural areas in Ghana: open defecating at residential spaces, beaches, bushes, gutters and road side, discharge of untreated waste into water systems, insufficient toilet amenities for both household and the broad-spectrum public as a whole. From the findings, it can therefore be deduced and concluded that the nature of environmental sanitation in Aboabo Zongo communities in the Asokore Mampong Municipality comparatively leaves a lot to desire, for it lacks pattern, system and commitment.

Research question 2: “What are the root causes of the poor environmental sanitation situation in Aboabo Zongo communities in Kumasi?” Respondents were asked this question in order to identify or point out determinants or factors (causes) that lead to poor environmental sanitation situations in the communities. In relation to this, three categories (themes) of root causes were identified with two of them having some special kind of other indicators. The analyses were performed against three global themes; behaviour and attitude, nature and industry.

Behaviour and attitude

Interviews were used in this regard to triangulate or cross validate the data obtained to determine how generalizable the findings ascertained could be. Regarding this, participants were asked to identify some of the root causes of poor environmental sanitation in the communities. In their submissions, it was noticed that almost everyone of them perceived poor environmental sanitation to be a behavioural and attitudinal problem. They claimed that people naturally have bad attitudes towards cleanliness, and such attitudes reflect in their behaviour. A section of participants recounted instances where community members were spotted deliberately dumping filth in drainages, urinating in open spaces and disposing human excrete where they are not supposed to be. This is what a participant to say:

BRC1: “Just as Hon. Kennedy Agyapong said, ‘Ghanaians are naturally born bad’. People have decided not to change their attitude. That’s all! Just imagine! You know that you don’t have to throw rubbish in the gutter, yet you do it; you don’t have to urinate anywhere, you do it; you don’t have to ‘do it’ in polythene bags, and you still do it! Do you need God intervene in this?” – (Business Operator).

Participants refused to accept that people ignorantly create garbage and filth. To them, members of communities are aware of their actions and inactions towards sanitation, and as a result should be held account for the unhygienic conditions they

subject their houses and the communities to. This is how one participant recounted her experience:

HRC4: *“We are our own enemies. I remember not long ago, there was this heavy rain. And you could see some people throwing their pilled garbage in that big gutter. Although at times, you will see rubbish piled up after heavy rain and wind blows but they are still the doings of a fellow human being.”* – (Household Member).

Nature

A relatively few participants asserted that poor environmental sanitation is as a result of activities which are beyond human control. They mentioned rainfall, heavy windstorm, among others as natural phenomena which cannot be ruled as being possible determinants of poor environmental sanitation. In the interview these respondents maintained that aftermath of heavy rainfall and strong winds often leave filth in houses and communities.

Rainfall

Participants pointed fingers at heavy rainfall as a major contributor to poor environmental sanitation. They said that heavy rain often leave huge and heaped garbage behind in many of the communities. To them, they believed that the poor state of sanitation is not always necessarily the doings of people. A section of participants shared instances where they had to deal with refuse that had been deposited in their various homes as a result of heavy rainfall. This is what some participants had to say:

HRC4: *“We also need to look beyond we people intentionally do to make their houses and the communities dirty. At times, it is not our fault. When it rains, there are some rubbish that are very difficult to trace how they landed in your home. The only conviction you get is that perhaps it is the rain the dragged along such trash.”* – (Household Member).

Brc2: *“This is my place of work. Everyone here can testify what happens here anytime it rains heavily. You cannot gaze in the gutters. Rubbish everywhere! It becomes very difficult to tell whether it is the doings of individuals. Likewise, it will sound quite unfair to blame the people living here.”* – (Business Operator).

Wind

Another aspect of nature that ran through participants’ responses as being responsible for poor environmental sanitation was wind. Regarding this, a section of participants said in the interview that there is a need to recognize the capacity of strong wind to cause havoc to the communities environmentally. They disclosed that many of the filth in households and communities are as a result of strong wind that precede heavy rainfalls. Some participants narrated their experiences of how strong winds messed their various abodes and their communities. These are sample expressions:

Hrc1: *“I remember some time ago, it rained cats and dogs around here. The wind that preceded the rain alone was as strong as ‘something’. When I returned home that day, our house was engulfed with filths which obviously were not generated in the house. Interestingly, one could still see some rubbers and tissues still brandishing in the skies because the wind was relatively still active. So you see, it is not all the time that people choose to litter around. The wind sometimes can causes commotion.”* – (Household Member).

Brc1: *“You know, you cannot control the wind. However, it gets unbearable many sometimes especially where it leaves you into thinking that rain will certainly follow judging from its intensity, and it doesn’t rain. It happens everywhere. You see papers and polythene bags flying in the air and finally resting in the gutters, people’s houses and virtually every corner in the communities.”* – (Business Operator).

Industry

Participants attributed the cause of poor environmental sanitation to some known and unknown industrial activities. A section of respondents revealed some routines of both indigenous and modern industries in the communities which they believed contribute to the poor state of sanitation in the area. Industrial activities cited by

participants included the operations of scrap dealers, recyclers and garment and fabric factories in the area. Participants stated that these manufacturers often diffuse residues of chemicals not in the air but also in drainages where no one knows where they settle. Other participants also said that solid wastes from these industries are sometimes left untreated exposing the communities to potential infiltration of filth whenever nature such as rain and strong wind strike. This is what one participant had to say:

HRC6: *“We have a company down there that buys scraps and recycles them. The ones they are unable to work on are often left unattended to. There are instances you will see some of these waste in the middle of the road especially when there is heavy rainfall.”* – (Household Member).

BRC3: *“The gutter you see right here extends to the main drainage down there. The tie and dye factory over there habitually would pour their used chemicals in the drainage from their end to the main drainage. My sister, anytime they release these waste chemicals, you cannot breathe. My concern is not entirely about the scent but where these chemical go eventually.”* – (Business Operator).

The results obtained denote that the root causes of poor environmental sanitation are largely not one-sided. A careful observation of the findings reveals that factors responsible for the phenomenon are behavioural and attitudinal, natural and industrial. These findings corroborate with Amoaning (2006) who critically observed sanitation situations in some selected areas in Ghana and concluded that community members do not adhere to good hygiene practices provided by health personnel, community based hygiene volunteers, zoom lion and other bodies concerned with improved sanitation. It can there be inferred from the findings that the major root cause of poor sanitation hovers around behaviour and attitudes of individuals in the communities.

Research question 3: “What effects do poor sanitation have on the health of people in Aboabo Zongo communities in Kumasi?” Respondents were asked this question to

ascertain the possible health consequences that are associated with poor sanitation practices among people living in Aboabo Zongo communities in Kumasi. Participants' views were assigned to two broad categories; disease and healthcare access. The disease category captures views of those who maintain that the phenomenon endangers the health of people as a result of its disease-prone nature. Meanwhile, the healthcare access category basically shows how the phenomenon (poor environment) poses financial challenges to people seeking better healthcare. In relation to this, data were obtained from multiple sources including views, observations and experiences from people outside the study setting.

4.2.4 Disease contraction

It was found out that contraction of hygiene-related diseases was inevitable as far as poor environmental sanitation is concerned. Almost every participant attested that poor environmental sanitation results in both water-borne and air-borne ailments in the communities. It was also revealed that certain sanitation related diseases turned out to be common among children in households and the communities at large as a results of the unhygienic conditions they are made to undergo. The rate at which children and community members are hospitalized due to hygienic related infections was also disclosed. A section of participants recounted their own experiences and those of their relatives pertaining to environmental and sanitation bound diseases they once suffered. Some even claimed that they are still battling such ailment as a result of their negligence of common and basic sanitation practices. Participants again showed their frustration because to them the present unhygienic conditions expose them to all forms of diseases. A participants had this to say:

BED3: *“You often hear that cholera is a thing of the past in this country. Right? It is never true! Cholera is very common here especially among the kids. We all know what brings these kind of diseases. Filth! I wonder why and how they can’t fathom that the things they do make them and their children contract these kind of sicknesses.”* – (Business Operator).

Another participant reiterated by stating that:

HED3: *“Those choked and open gutters naturally breed mosquitoes. I think it will be fair for me to say that mosquitoes have come to stay in our communities because of the way we deal with sanitation and all forms of sanitation. Malaria is common like headache here, and it does not pertain only to this house. I’m certain that it is same in every home in this community. I tell you, in this house, at least, every two weeks or in a month, it is either one of us getting admitted to the hospital or visiting the pharmacy to buy drugs. Sadly, it appears that children are the ones who usually suffer the most. My heart always bleeds for them especially considering how weak and pale they look when they have malaria, diarrhea, cholera, and so on. Is it not surprising that once someone from here visits the pharmacy or hospital, the person comes back home with a malaria drug. This tells how our gutters, public toilets and urines are costing us.”* – (Household member).

One participant recounted her experience in this regard:

HED2: *“I was not really giving attention to hand washing until I fell sick one day. As always, I presumed it was just a migraine. I went to the pharmacy, bought some drugs but there was no sign of me getting better. After few days, I went to the same pharmacy repeated my issue but this time around, the medication was altered. I thought I’d feel well after that. Hhmmmm...my dear, I was completely wrong for thinking that! It was when I visited that hospital that I was finally diagnosed of typhoid. So the doctor started asking me questions which in my view sounded funny. Questions about hand washing, warm food and other stuff! ‘Like-play-like-play [jargon], I spent four days in the hospital. The doctor said there are still traces of the bacteria lurking in my system. I have therefore been advised to visit the hospital from time to time to check the status of the bacteria loads. So since then, I have come to appreciate the dangers in simple cleanliness if they are ignored.”* – (Household member).

A similar experience was also shared by another participant. This is what he said:

BED3: *“People take for granted what is going on here. I don’t wish that misfortune befalls on anybody here but I hope that people experience a bit of what my friend went through before he passed away. At first, we thought it was spiritual but it was later found out that it was cholera and malaria that first broke him down. As we speak, I cannot lie to*

you, I am still scared. Looking at this neighborhood, such diseases are bound to attack people living here. Open and choked gutters everywhere, people throwing fecal substances in polythene bags in open spaces, and so on.” – (Business Operator).

4.2.5 Healthcare Access

Participants disclosed that poor environmental sanitation conditions in the communities affect their financial strength which invariably deny them access to proper medical care. It was found out that members use their savings and income frequently on readmissions as a result sanitation related diseases. Some participants claimed that they spend a lot on admissions and readmissions which often dry up their coffers. They continued that many a time they are unable to visit the hospitals again because there would be no money left for treatment. It was revealed that some deliberately decline hospital admission for fear that they would not be able to pay the bills. Others also disclosed instances where they had to cunningly leave the health centers and come home with prescriptions. Below are sampled experiences shared by participants when they were asked how poor environmental sanitation situations affect their state of their health:

H_{AH}7: “It is sad knowing that the same sickness is taking you to hospital almost every time. I cannot recount the number of times I have been admitted to the hospital for malaria and typhoid. I’m always given injections and drips every time I go on admission. The medical care is not even free for card holders ooh! I pay for those bills that the Insurance doesn’t cover. Hhmm...some of the drugs prescribed are somewhat expensive too” – (Household member).

Another participant had this to say:

B_{AH}2: “I know someone who comes to me often for a quick loan to foot her children’s hospital bills. Malaria today, fever tomorrow, cholera the day after. Apparently, she is always frustrated especially every time any of her kids falls sick. She told me that she has been denied medical treatment on a couple of occasions simply because the hospitals think she has the habit of taking prescriptions outside rather than buying them from the hospitals. They have no idea that she simply just cannot afford it.” – (Business Operator).

From the findings, it can be deduced that poor environmental sanitation is a potential threat to the health of people living in the Aboabo Zongo communities. The findings revealed how poor sanitation situations subject study subjects to all forms of hygiene related diseases such as malaria, cholera, diarrhea and typhoid. Children were found to be the most vulnerable as far as sanitation related diseases are concerned in the communities. Analysis of the responses also unveiled frequency of disease contraction. It was noticed that in a span of two or four weeks, at least a member of a household or community is hospitalized and diagnosed of hygiene or sanitation related disease. The findings also showed the struggles members of the communities go through in order to access healthcare. It was realized that they spend fortunes on frequent readmissions eventually leaving them with little or nothing to use for further medical care.

These findings tend to support Danso (2016) and Black et al. (2010) who maintain that numerous sickness and injuries reported in Ghana are related to poor sanitation, and that diseases attributable to poor sanitation currently kill more children globally than AIDS, malaria and measles put together, and diarrhea is the single biggest killer of children in Africa. The findings are also seen to confirm the report that health impact of inadequate environmental sanitation leads to a number of financial and economic costs including direct medical costs associated with treating sanitation related illnesses, lost income through reduced or lost productivity, and the government costs of providing health services (WHO & UNICEF, 2017). Based on the findings, a deduction can be made that people living in Aboabo Zongo communities are always at risk of contracting hygiene and sanitation related diseases and also stand a greater chance of going through healthcare access challenges.

Research question 4: What nature of interventions are embarked by the Municipal Assembly to solve sanitation problems in Aboabo Zongo communities? The focus was to assess the nature of interventions the Municipal Assembly embark to solve the sanitation problems in the study area. In relation to this, responses given by participants during the interview were tabulated in a table with descriptions. The obtained findings were collected under the themes of water, drainage and sewage intervention, solid waste management intervention, toilets, lavatories and sanitation intervention, legal support intervention and education support intervention.

Table 4.1: Operational Definitions for Coding Categories

Categories	Definitions
1. Water, drainage and sewage intervention	Water supply, drainage and sewage systems are installed. There are regular checks and maintenance on the facilities. Drainages are cleaned, water supplied are purified and sewages are distilled from time to time.
2. Solid waste management intervention	Waste collectors are available in the communities. Waste bins are provided at vintage points. There are approved allocated sites for refuse. Solid wastes are picked up regularly and dispose appropriately at their allocate sites.
3. Toilets, lavatories and urinary intervention	Toilets, lavatories and urinals are installed across communities. Facilities are of same standard across households and communities. Toiletries and sanitary materials are provided for users. Toilets are cleaned. Toilets and lavatories are regularly discharged and sent to the treatment plants.
4. Legal support intervention	Environmental and sanitation laws (communal rules and regulation/by-laws) are established. There is enforcement of the law.
5. Educational support intervention	There is mass education on environmental sanitation. Households and community members go through regular environmental sanitation tuition. There are myriads of platforms committed to this course.

Table 4.2: Categories, Frequencies and Sample Expressions Related to the Theme of Interventions

Categories	N	Sample expressions
1. Water, drainage and sewage intervention	M	Households in communities have water systems installed. Water supply checks and maintenance are not within Assembly's jurisdiction. Drainage and sewage systems checks are done occasionally.
2. Solid waste management intervention	M	Waste collection bins are provided but are barely sufficient in the communities. Community waste collection bins are irregularly picked up. There are limited approved dumpsites in the communities.
3. Toilets, lavatories and urinary intervention	F	Households and communities have toilets, lavatories, urinals and sanitary systems installed but are inadequate to serve communities. Facilities are same across households and communities. There are adequate provision of toiletries and sanitation facilities for members. Toilet are regularly checked and cleaned. Septic tanks are discharged timely and sent to treatment plants.
4. Legal support intervention	F	There are laws passed to criminalise environmental sanitation practices, behaviours and attitudes deemed inappropriate in the community. There is strict adherence or enforcement of the laws formulated.
5. Educational support intervention	M	There are regular sensitization campaigns on sanitation. Media houses join the crusade. Individuals and groups in the communities are educated every now and then on environmental sanitation issues.

Note: N shows the number of participants; M means majority; F means few.

4.2.6 Water, drainage and sewage intervention

It was found out that the nature of intervention embarked by the Assembly in this regard tended to jurisdictional. In an interview with one officer from the assembly, it was realized that the nature of their intervention with regards to water, drainage and sewage had a scope. According to him, since the assembly has no control over water supply, it becomes very difficult to ensure the supply, safety and maintenance of such service. However, he revealed the assembly occasionally does clean up and maintenance works on constructed drainages in some major communities. This is what the officer had to say:

AS_{NI}: *“It is our wish to make sure that things used or consumed in the communities are safe but we cannot control everything. For example, GWCL supplies the communities with water so they solely mandated to maintain their services. We don’t go there but for the big gutters, it is our duty that we in collaboration with some committed members in the communities clean them. We don’t always embark on such cleaning exercise but we make sure that once awhile, we go down that drain to tilt it.”* – (Staff).

4.2.7 Solid waste management intervention

Responses gathered in relation to intervention in solid waste management systems revealed that there are insufficient waste collection bins in the communities. It appeared that the assembly is doing their best to install at vintage points in the communities waste collection bins but they seem not to be enough to serve the communities according to the views expressed by members of the communities. A section of participants lamented over lack of dumpsites and disclosed how waste collection bins provided are delayed before they are picked up when they are full. Participants expressed their views in this regards:

H_{NI4}: *“Dustbins provided are genuinely not enough. It is like one dustbin to 200 houses. We know that Assembly is trying to get us dustbins but they should push harder. People are messing around with thrash because there are no dustbin. We cannot blame them much.”* – (Household member).

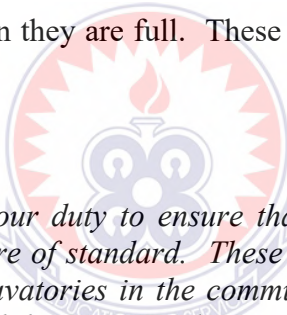
B_{NI4}: *“There are only two dumpsites serving these communities. They are not enough. We have a big waste collection waste bin provided by the Assembly which we all use. Although it helps us a lot but the problem is, when they get full, it takes like ages before they are picked up and emptied.”* – (Business Operator).

4.2.8 Toilets, lavatories and urinary intervention

In an interview with a staff of the assembly, it was found out that the assembly ensures that there are standard toilets, lavatories and urinary systems installed in households and communities. Nevertheless, a section of respondents argued that although, the assembly ensures the availability of these facilities in both households

and communities, in their opinion, they are still inadequate to serve the communities. It was also disclosed in the interview that the Assembly only advises that toiletries and sanitary facilities be made available for users of public toilets, urinals and lavatories.

He also mentioned that the assembly has officials who on regular occasions inspect public toilets, lavatories and sanitation systems to find out their state of cleanliness. On this, a section of respondents questioned the effectiveness of this task force because according to them, so facilities are nothing good to write home about. He also claimed the assembly does not only advise timely disposal of septic tanks when they are full but they also make follow ups to ensure that they are indeed discharged and treated with plants when they are full. These are sample response of participants during the interview:



SN12: "It is our duty to ensure that houses in the communities have toilets that are of standard. These standards should reflect the public toilets and lavatories in the communities. Honestly, it is not entirely our responsibility to provide tissue papers, soaps, sanitizers, water, and so on for users of public toilets. We only encourage attendants to make sure that such facilities are readily available to them. We also have officers who move round all the time to check that public toiletries, lavatories and urinal systems are cleaned regularly. We are also very meticulous about septic tanks. We make sure that our officers report issues on that and make the necessary follow ups. They are seen to it that they are emptied, sent and treated appropriately when they are full." – (Staff).

BNI3: "There public toilets and urinals but I think they are not enough. Those 'Tankas' [reference to sanitation inspectors] people too..., I don't know what their work really is. They have to act on the toilet and urinal owners. Some of these places of convenience are a complete mess!" – (Business Operator).

4.2.9 Legal support intervention

There was a general response when participants were quizzed whether there exists any form of sanitation rules, regulations and laws in the communities. Both community members and staff of the assembly maintained that there are sanitation laws abiding the community. The officer interviewed revealed that efforts are being to enforce these laws to the maximum. Participants shared experiences and cases where individuals who were found flaunting certain environmental sanitation by-laws were getting fines and jail terms. There was however a consensus in relation to the effectiveness of sanitation laws in the communities. The officer and a section of the community members attested that a lot more can be done to intensify sanitation laws to deal fairly and accordingly with culprits. This is what the officer had to say:

SL11: *“We have rules, regulations and laws that approve and disapprove certain behaviours, attitudes and practices towards environmental sanitation. It may interest you to know that some people in these communities have got fines and sentenced to short term imprisonment for breaking these laws.” – (Business Operator). You know, to make these sanitation laws work is a matter of collective commitment. Residents have to be bold and speak up, report those who flaunt these laws to the appropriate quarters. This has been the major challenge for now.”*

Another participant stressed by saying that:

BNI3: *“Yes! The laws are there. A number of houses around here have been fined on a couple of occasions. I was also once a victim. We sometimes even argue with these officers but I think they are not only doing their job but they are also invariably helping us to stay safe. Moving forward, I believe the laws can be strengthened to deal with everybody squarely. Sometimes, you get to see what people do around here and you begin to wonder if there are indeed sanitation laws around here. People don’t even show up during National Sanitation Days, which happens to be the first Saturday of every month but nothing is done to them.” – (Business Operator).*

4.2.10 Educational support intervention

It was realized from the interview with another staff member that the Assembly helps in educating the public especially members of the communities on appropriate sanitation practices ranging from personal to environmental hygiene. It was found out that basic hygienic practices such as hand washing, appropriate disposal of litters, among others are some of the education the Assembly assists in providing. She claimed that the Assembly has an information van that they use in spreading such information to the public. Adding to this, he mentioned that local radio stations sometimes come aboard to help whiles the Assembly and some individual staff members use their social media handles to sensitize the communities on environmental sanitation practices. She however expressed disappointment in the constant lack of commitment shown by some communities and media houses in helping to solve sanitation controversies through public education. On this, majority of participants confessed that their input in environmental sanitation education has not been the best. This is what the officer said:

SL13: *“We have information mobile vans that we use to move around. They have these megaphones installed so people hear us talk about sanitation practices, how they can keep themselves as well as the environment clean. We occasionally contact radio stations to help us. You know, they are business people so you don’t expect them to run such announcements every day even though they do their best. The Assembly also has social media handles like Facebook and Twitter so some information are posted there as well. Some of us also run such education on our Instagram pages, Facebook walls and Whatsapp status bars. Many a time, it is sad that the communities do not appreciate what we are trying do. They care. They think it is our job to run such education but it is for the betterment of everyone.” – (Staff)*

One participant attested to this by saying:

H_{NI3}: *“Before God and man, personally, I have not educated or held any discussion with anyone regarding sanitation practices. I see the Assembly people with their vans making announcements but I do not bother to ask what is going. Sometimes, all we say is they are making noise.”* – (Household member).

The responses gathered show that interventions are in place to curb sanitation situations in Aboabo Zongo communities. The findings revealed that the nature of interventions embarked by the Assembly tend to vary in nature. It has been found out that the Assembly is doing its best to ensure that drainage and sewage systems are installed and maintained (water, drainage and sewage intervention), households and communities have standard toilets, lavatories and urinary facilities which are cleaned and regularly treated as well (toilets, lavatories and urinal intervention). The findings in relation to the nature of intervention further show the Assembly’s effort in managing solid wastes through the provision of waste collection bins (Solid waste management intervention). It has also been revealed that there are sanitation laws which are overseen by the Assembly that they are effectively enforced (legal support intervention) in the communities. The educational support intervention by the assembly was by far identified as the most effective intervention according to the participants interviewed.

These findings confirm the IESS (2016) report that in line with government’s efforts toward sanitation enhancement, the National Environmental Sanitation Strategy and Action Plan identifies (NESSAP), identifies seven (7) focus areas necessary to drive forward efforts for achieving good sanitation; capacity development - information, education and communication, legislation and regulation, levels of service, sustainable financing and cost recovery, research and development, monitoring and evaluation.

4.3 Analysis of observation

Series of observations were carried out in the study area. They were conducted to also ascertain the nature of environmental sanitation and as well identify the root causes of poor environmental sanitation situation in Zongo communities in Aboabo in the Asokore Mampong Municipality in the Kumasi Metropolis. The observations were carried out in various households and in the communities at large. The analysis was therefore setting specific. That is, data obtained were analysed according to the setting in which they were obtained.

4.3.1 Household Observation

Observations carried out across some selected households in the communities revealed certain patterns of sanitation practices. Pertaining to water supply, it was noticed that a considerable number of households had access to water supply. Some households had water storage facilities some which were covered while others did not have covers. Only a few households applied water disinfectants to the water stored in these facilities. Floors of water taps were not same across households. Some floors were clean whereas others appeared as though they have not been cleaned for some time especially in households that had mechanized wells constructed. At the time of observation, it was seen that water supplied by GWCL was clean.

Toilets, lavatories and urinary systems were also observed. It appears that not all households had these facilities installed in the communities. They were exotic and conventional models. With regards to households that had toilets and lavatories, only a handful of them were clean and disinfected. Toilet bowls, containers and floors were comparatively not as pleasant as they should be. However, it was found out that households that had clean toilets and lavatory systems were those who had quite

distinct characteristic such as presence of landlord, nuclear family, informed literacy and financial levels of household members. Sanitary facilities such as tissues, soaps, sanitizers, were hardly found in houses occupied by tenants but this was not the case of households that were dominated by nuclear family members. It was also realized that only few households had access to both toilet and urinary facilities. Majority of the households in the communities had access to either toilet or urinary facility.

It was observed that drainage and sewage systems varied among households. Some households had facilities installed whereas others did not. Open drainage turned out to be common across households but not many of them were in good shape although most of them had means of containing and exiting waste water. It was also seen that sewage holding tanks had more occupancy level in almost every household. It was realized that drainage systems in some households were likely to cause flood since it was noticed that some had already been causing such phenomena in the communities.

Solid waste collection bins were found out to be available in households. The nature of some waste collection bins indicated that they were regularly picked up by private waste collectors or managers. However, it was observed that some households intentionally left solid wastes behind for reasons such as feeds for herds or scrap dealers.

In relation to the root causes of poor environmental sanitation in the area, it was realized that attitude and behaviour of community members played a key role. During the observation, it was realized that even in households where solid waste collection bins had been installed, household members were found littering the compounds. It was also seen that members were not using the drainages in the house to exit waste water. Instead, they relied on the main drainages installed in the communities.

4.3.2 Community Observation

The sanitation practices were also observed in some selected areas in the communities. It was realized that there were limited open drainages installed in these areas. The drainages in some part of the communities were choked with plastics and other solid wastes. Others were stuck and filled with stagnant water. Waste water hardly exited through some of the drainages installed in the communities. The communities also had water supply stations where community members usually resort to. Water supplied was also found out to be clean at these stations. The floors of the taps were however not as tidy as they should be. It also became quite difficult to tell from outside whether the reservoirs were clean inside or some form of water disinfectant had been used to treat water supplied from these tanks. Commercial activities were also evidenced around some of these water supply stations

The communities had public toilets, lavatories and urinal systems installed in some particular areas. The urinal systems were largely traditional in nature but public toilets and lavatories were both modern and conventional. It was also observed that tissue papers were the only component of sanitary facilities that were provided for users of the facility. This service even came with a fee. Toilet bowls and floors were not clean. It was also seen that occupancy level of toilets and lavatory facilities was overwhelming.

Waste collection bins were mounted in some selected areas. Community members usually made use of these facilities. Nevertheless, it was noticed that they were not insufficient to serve the communities effectively. Solid waste bins were full waiting to be disposed. It was unclear how solid wastes were managed at the dumpsites but it

was obvious that they were not recycled. There were also limited zones earmarked for refuse dump for the communities.

In the communities, it was a common practice among members to leave thrash behind. Countless community members were spotted throwing waste water, plastics and bottles in open spaces. Some were also seen leaving leftover foods in their packs. There were instances where people were captured urinating and spitting in open drainages and behind walls.

These observations to a very large extent confirm the responses gathered from respondents during the intervention in relation to the nature of sanitation and root causes of poor sanitation at Aboabo Zongo in Kumasi. Judging from the findings obtained from both data, it can be deduced that the nature of environmental sanitation in Aboabo Zongo communities in the Asokore Mampong Municipality, Kumasi relatively has not been the best because it lacks pattern, system and commitment. It can also be said based on the observation that the attitude and behaviour are largely the root cause of poor environmental sanitation in the Aboabo Zongo communities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter is where the main findings of the research are presented. There are five main sections. Section 5.1 presents the main findings based on the various research questions. Section 5.2 presents the conclusions drawn from the research and my contribution to knowledge. Section 5.3 presents the recommendation based on the findings from the research. Section 5.4 presents the recommendations for future research while 5.5 presents the limitations of the research.

5.1 Summary of findings

The study was conducted to investigate the state of sanitation in Aboabo Zongo communities in the Asokore Mampong Municipality in the Kumasi Metropolis in the Ashanti of Ghana.

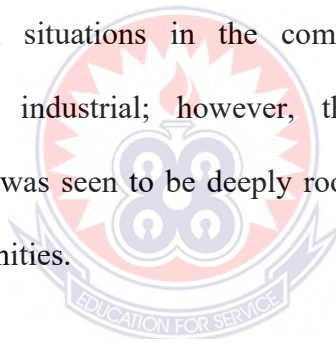
5.1.1 Research Question 1: “**what is the nature of environmental sanitation situation in Aboabo Zongo communities in Kumasi?**”

Initially, the nature of sanitation in Aboabo Zongo communities was measured against three systems. The identified systems together with their corresponding indicators pointed to the phenomenon as it naturally exists in the communities. In relation to the first system, which is the water system (WS), it was realised that water was common in the communities but community members were skeptical about water safety and maintenance. Within the second system, which is drainage, sewage and solid waste system (DSSWS) the study revealed that facilities were being overexploited in the communities as a result of limited installation and by virtue of their design. On the third system, which is toilet, lavatories and urinary systems (TLUS), the study showed

that provision of sanitary facilities were insufficient. It was also found out that only certain components of TLUS were available in houses and communities. The displeasure of community members towards the prevailing conditions of some TLUS in the community was realized in the study.

5.1.2 Research Question 2: “ what are the root causes of poor environmental sanitation situation in Aboabo Zongo Communities in Kumasi?”

The study relied on three major categories to identify the root causes of poor environmental sanitation in Aboabo Zongo communities. It was found out that the root causes of poor environmental sanitation appeared multi-dimensional but not entirely one-sided. It was realized from the study that factors responsible for poor environmental sanitation situations in the communities were behavioural and attitudinal, natural and industrial; however, the major root cause of poor environmental sanitation was seen to be deeply rooted in behaviour and attitudes of individuals in the communities.



5.1.3 Research Question 3: “how does poor sanitation affects health of people in Aboabo Zongo Communities in Kumasi?”

Poor environmental sanitation was found out to be a potential threat to the health of people living in the Aboabo Zongo communities. The study revealed how the phenomenon has been exposing residents to all forms of hygiene related diseases such as malaria, cholera, diarrhea and typhoid. It was seen that the risk of children contracting sanitation related diseases was relatively higher in the communities. The rate at which community members contracted infections was also found out to be frequent in the sense that it in every four weeks, at least a member of a household or community is hospitalized and diagnosed of hygiene or sanitation related infections.

The study again revealed the challenges of community members in accessing healthcare. It was realized that the cost involved in frequent hospital readmissions jeopardises chances of seeking further better medical care.

5.1.4 Research Question 4: “what nature of interventions are embarked by the Municipal Assembly to solve sanitation problems in Aboabo Zongo communities?”

It was realized from the study that the nature of interventions embarked by the Assembly to curb sanitation situations in Aboabo Zongo communities varied. It was found out that the Assembly’s intervention ranged from water, drainage and sewage intervention, toilets, lavatories and urinal intervention, solid waste management intervention, legal support intervention and educational support intervention. The study showed efforts made by the assembly in ensuring that facilities are installed, treated, managed and maintained in households and communities, sanitation laws are abided and the appropriate environmental health and sanitation education is given to the communities. It was noticed however that educational support intervention was by far the most dominating intervention.

The study also disclosed some of the best practices in sanitation management that have the tendency to improve the health of people in Aboabo Zongo communities. It was realized that public education on environmental and sanitation health issues, provision and management of adequate solid waste management facilities, installation and treatment of standard toilets, lavatories, urinal, drainage, sewage and solid waste systems in households and communities, change in attitude and behaviour and strict enforcement of sanitation laws constitute ways of improving people’s health in the communities.

5.2 Conclusion

The study draws conclusions based on the findings obtained. In relation to research question one, conclusion is drawn that the nature of sanitation in Aboabo Zongo communities is determined by water systems, toilet, lavatories and urinal systems and sewage, drainage and solid waste systems. It has been concluded that water systems in Aboabo Zongo communities are reliable in terms of supply but their safety and maintenance still remain unknown and questionable. Conclusion has also been drawn that toilet, lavatory and urinal systems installed in Aboabo Zongo communities are not properly maintained and remain insufficient to serve the communities. The study again concludes that drainage, sewage and solid waste systems in Aboabo Zongo communities are overexploited due to the limited installations.

Regarding research two, the study has concluded that the root causes of poor environmental sanitation in Aboabo Zongo communities are basically three-dimensional. Inference is drawn that behaviour and attitude, natural and industry contribute to the poor environmental sanitation situations in Aboabo Zongo communities. However, based on the findings, the study eventually concludes that the major root cause of poor environmental sanitation is firmly tied to behaviour and attitudes of individuals in Aboabo Zongo communities.

Conclusion has been drawn on research question three that poor environmental sanitation poses inevitable health consequences on people in Aboabo Zongo communities. The study concludes that poor environmental sanitation walks hand in hand with hygiene related diseases frequently contracted in Aboabo Zongo communities. Again, the study draws the conclusion that children in Aboabo Zongo communities stand a greater chance of contracting hygiene related diseases than

adults. Based on the findings, conclusion has also been drawn regarding the frequency of contraction of sanitation related infections in Aboabo Zongo communities. The study therefore concludes that the rate of contraction of sanitation related diseases in Aboabo Zongo communities is relatively regular or frequent than seldom. The study further concludes that poor environmental sanitation can have eminent adverse impacts on healthcare access of people in Aboabo Zongo communities.

In relation to research question four, the study concludes that the nature of intervention put in place by the Assembly to curb environmental sanitation in Aboabo Zongo communities include water, drainage and sewage intervention, toilets, lavatories and urinal intervention, solid waste management intervention, legal support intervention and educational support intervention.

5.3 Recommendations

Environmental sanitation has now become a topical issue globally. This is a result of the possible impact it leaves mankind with. Considering the consequences associated with the phenomenon, the health aspect of it cannot be ignored. It is on this basis that this study was conducted to investigate the state of sanitation and health in Aboabo Zongo communities and possibly explore how the two phenomena interplay. The results and findings of the study thus lead to the following proposed recommendations:

1. It is crucial that Assemblies work collaboratively with stakeholders of environment, sanitation and health such as the Environmental Protection Agency, Ghana Health Service, Ministry of Education, Ministry of Science and Technological Innovations, among others to intensify public education

on sanitation and health related issues. This will make residents understand that sanitation is a collective responsibility.

2. The security services should be fully tasked to ensure that people comply with sanitation laws. National Sanitation Days should be made compulsory for everyone. Sanitation offences needed to be reviewed at the national level through the parliament to district and municipal levels as early as possible so that appropriate sanctions can be given to environmental and sanitation culprits.
3. Since children are the most vulnerable as far as hygiene related infections concerned. Parents must do well to protect their children from common contracting sanitation related diseases like malaria, typhoid, cholera, among others. They can do this by making or encouraging them to sleep under treated mosquito nets, educating them on basic sanitation practices such as personal and environmental hygiene like hand washing, drainage cleaning, appropriate littering, etc. Parents should also do well to control the rate at which they wards move out at night since the general perception has been that mosquitoes tend to be effective at time. They should also treat drinking water for the wards and make sure that food are warm before they are set for their children to eat.
4. The government should construct more drainages and sewages across communities in the country. Existing drainages ought to be drenched to prevent intermittent chokes. The government can execute this through the joint effort of the Town and Country Planning Department. They will be able to identify which areas need drainage and which drainages need drenching. A body should be mandated by the government to ensure that

houses construct their own drainage and sewage to ward off the pressures on the main drainages.

5. The services of sanitation and sanitary inspectors have to be clearly defined as well as their autonomy. They should at least have the mandate to issue spot fines to offenders. They should also be encouraged to widen their scope of inspection to cover other areas of sanitation practices such as littering. Sanitary inspectors need to take a close look at public toilets, lavatories and urinals and compel those in such businesses to make available enough sanitary facilities rather provide only as aspect of them.
6. Last but not least, individuals should be encourage to understand the need to keep the environment safe. Such awareness can go a long way to inform their character which basically is a blend of their attitudes and behaviours. Opinion leaders such as religious and traditional leaders like Imams, pastors, chiefs can help in this regard as well. Their influence can be exerted on individuals within their circles to imbibe in them a feeling of attitudinal change.

5.4 Recommendations for Future Research

Ideally, the researcher made series of attempts to sanitation and health in Aboabo Zongo communities in the Asore Mampong Municipality. Interestingly, it appears that environmental sanitation and health are conjoined phenomena insofar as human activities with the immediate environment continue to suffice. This implies that the health of residents are endangered as long as their actions and inactions towards the environment have been the best. It is against this that the researcher entreats scholars, fellow researchers and stakeholders to also pick up the mantle and research into related areas such as sanitation and commitment among residents in Ghana. This will

help residents to identify environmentally appropriate behaviours and sanitation practices needed to stay healthy.

Again, the researcher did not control for such variables as gender, geography (location), socioeconomic backgrounds, sociocultural characteristics such as level of education and training of participants. Further research could also be carried out in these areas. Notwithstanding, future research could also be conducted using more participants (community members) since this research was carried out on one hundred (100) community members only.

5.5 Limitations

During the data collection process, the researcher encountered sudden technological problem. Participants' recorded voice notes were not clear. Consequently, resting on technology that a person does not have a full command on is another limitation because there is always a possibility of losing data or experiencing unforeseen problem. Again, the study appeared quite challenging for the researcher and the participants alike because, although she made sure that participants were briefed before, some of them were still shy.

Secondly, the researcher could not meet all household members in the communities in the municipality due to long distance, restricted access due to overlap of beliefs, limited time of the project and the sudden occurrence of the COVID-19 pandemic. Because of this, the researcher had to use a sample of participants to represent all members in the Aboabo Zongo communities in the Asokore Mampong Municipality. Due to this, the generalizability of this study becomes very difficult when one considers the mass population of residents in Zongo communities in the municipality and the country at large.

Last but not least, during the data collection process, some household members felt shy to disclose the true nature of sanitation practices pertaining to the area. Others were also reluctant to respond to some interview questions. These attitudes made the researcher question herself as to the authenticity of the data gathered from these participants.



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APPENDICES

APPENDIX A

Observation Checklist for households and community
HYGIENE, SANITATION AND HEALTH INSPECTION CHECKLIST AND
RECORDS

Nature of Environmental Sanitation and Root Cause(s) of Poor Sanitation

Location			Date of Inspection	
Inspection Criteria:	Check/ Tick	Priority Code	Mode of observation/ source of information	Comment/ Remarks
<i>1. Water supply and water availability</i>				
Households/community have available water sources.	<input type="checkbox"/>			
Water sources are protected (by suppliers, community members or household members). Storage tanks have tight fitting covers, are vented and are protected from contamination.	<input type="checkbox"/>			
Water sources are contaminated (from source, by others, by members of household).	<input type="checkbox"/>			
Households provided with a safe pressurized supply of fresh water that is filtered and chlorinated for use in kitchens, toilets, and laundry facilities, and for other cleaning tasks.	<input type="checkbox"/>			
Water is available 7 days a week, 24h a day in the household.	<input type="checkbox"/>			
Level of water service vary during the year in the community/household.	<input type="checkbox"/>			
There is improvement or decline in level of water supply over the past few years in the community/household	<input type="checkbox"/>			
There are plans to improve water supply in the community and households at large	<input type="checkbox"/>			
<i>2. Sanitary accommodation (toilets & bathrooms)</i>				
Toilet facilities are available in household/community.	<input type="checkbox"/>			
Toilets are connected to a septic tank in the household/community.	<input type="checkbox"/>			

Toilet floors, urinals and commodes are clean in households.	<input type="checkbox"/>			
Households have clean lavatories, mirrors, shelves and floors.	<input type="checkbox"/>			
There are current approaches but they differ depending on economic conditions of the household/community members.	<input type="checkbox"/>			
Household/community members have specific preferences regarding toilet placement (in the house, in the backyard).	<input type="checkbox"/>			
Factors such as cost, convenience, health, cleanliness, odours, etc. are most important to the households and community members.	<input type="checkbox"/>			
Appropriate and adequate sanitary facilities/appliances (cleaning equipment and supplies for toilet/bathrooms) provided for members of household/community.	<input type="checkbox"/>			
Container for waste disposal provided and emptied daily and free of unpleasant smell/odor in household/community.	<input type="checkbox"/>			
Households have measures when their toilet/septic tank is full.	<input type="checkbox"/>			
<i>3. Drainage, sewage and solid waste</i>				
Drainage system is installed in household/community (Type of drainage system installed: covered, open, earth, concrete, sewer).	<input type="checkbox"/>			
Drainage water have means of exiting household/community.	<input type="checkbox"/>			
Present status of drainage facilities in household/community (good, better, best, bad, worse, worst)	<input type="checkbox"/>			
Floods occur frequently in households/communities.	<input type="checkbox"/>			
Water levels during flooding are relatively high in household/community	<input type="checkbox"/>			
Wastewater are channeled into rainwater drainage in household/community.	<input type="checkbox"/>			
Sewage storage tanks are only used in households with an occupancy level of 30 and below.	<input type="checkbox"/>			

Sewage holding tank when used, is in good working order and adequate for the number of household members.	<input type="checkbox"/>			
Sewage regularly taken by tanker to an approved Treatment Plant. Records of waste transfers are kept.	<input type="checkbox"/>			
Solid wastes are dumped into drainages (gutters)	<input type="checkbox"/>			
Solid wastes are sent to dumping sites.	[]			
Solid wastes are left unattended to.	[]			
Solid wastes are burnt.	[]			
Private waste agencies take care of solid wastes.	<input type="checkbox"/>			
Parts of the solid waste recycled or reused	[]			
Scale of open dumping and littering of solid waste in households and communities. (Scales: good, satisfactory, poor, commendable)	<input type="checkbox"/>			
There are waste collecting bins, trash cans and basins for solid wastes in households and communities	<input type="checkbox"/>			
Root Cause(s) of Poor Sanitation				
<i>1. Behaviour</i>				
Household and community members litter wastes around ignorantly.	<input type="checkbox"/>			
People intentionally chose to throw rubbish around.	<input type="checkbox"/>			
People leave more dirt behind especially when there are no onlookers. Spills from waste collectors	<input type="checkbox"/>			
<i>2. Attitude</i>				
Waste are generated after cooking and at the end of other domestic related activities in household.	<input type="checkbox"/>			
Waste are left unattended to after burning. The mindset that some people are responsible for attending to wastes is also another factor.	<input type="checkbox"/>			
When people think that a particular waste is improperly disposed, they leave/ignore it or send them to another zone other than a refuse dump.	<input type="checkbox"/>			
Delays in waste pickups by collectors.	[]			
<i>3. Logistics and legislation</i>				
Absence of waste collecting bins in households and communities	<input type="checkbox"/>			

Exorbitant charges by waste collectors and waste management companies	<input type="checkbox"/>			
Inadequate dumping sites and distance to refuse dumps.	<input type="checkbox"/>			
Absence of sanitation bye-laws in households and communities	<input type="checkbox"/>			
Flexibility of sanitation laws.	[]			
Nature/‘ Act of God’ and Waste management systems				
Flood	[]			
Strong wind	[]			
Heavy rainfall	[]			
Earth tremor, earthquake	[]			
Landslide	[]			
Waste managers	[]			
Industries	[]			

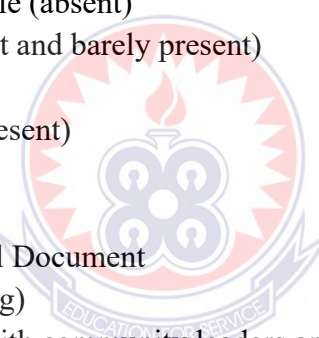
Adapted: HSSE World (2016) and Water Supply & Sanitation Collaborative Council (2014).

Priority Codes:

- 0 – Not observed/observable (absent)
- 1 – Not clear (barely absent and barely present)
- 2 – Clear (present)
- 3 – Very clear (strongly present)

Mode of observation

- D. O. (Direct observation)
- R.O.D. (Review of Official Document)
- C.M. (Community Mapping)
- I.C.L. & S.A. (Interview with community leaders and sector agencies)
- H.V. (Household visits)



APPENDIX B

Interview Protocol for *household members, service providers and small scale businesses*

1. Do you mind introducing yourself to me? (Probe for age, religion, occupation and educational level)
2. What is your role in this household?
3. For how long have you lived in this house where you and your household presently live?
4. Are you really familiar with your community? How long have you live here?
5. Tell me about some of the things you like about your household and your community as whole?
6. If I should ask you, are you familiar with the term ‘sanitation’? If yes, what is your understanding of it?
7. Can you briefly tell me what you have observed in relation to sanitation in your household or community?
8. Can you confidently say sanitation in your household/community is the best? If yes/no why?
9. Does your household/community have available water sources? If yes, are they protected or contaminated? How are they protected or contaminated, and who protects or contaminates them?
10. Are they safe for domestic purpose such as cooking, drinking, washing and other cleaning tasks?
11. How available is water/water supply in your household/community throughout the day, week or month?

12. Do you often hear about suppliers' plans to improve water supply in the household and community?

Now, I will want to talk to you about toilet, lavatories and urinal systems in your household/community.

13. Does your household have a toilet, urinals and commodes? If yes, are they private (for household alone) or public (open to members of other households)? What about the community, are there toilet facilities available?

14. What type of toilet system do you have in your household or community? Is it traditional (latrine/KVIP) or ('water closet') western? Are toilets connected to a septic tank in the household/community? What can you say about the toilet floors, urinals and commodes, are they clean?

15. Some lavatories are clean, there are mirrors, shelves and neat floors. Can you relate these to your toilet and lavatory systems in your household/community?

16. Do you have appropriate and adequate sanitary facilities (cleaning equipment and supplies for toilet and bathrooms) provided for household/community members?

17. Do you have trash cans or containers for waste disposals? How frequently are they emptied? Are they free from unpleasant odour in the household/community?

18. How are septic tanks treated when they are full? Do you have any measures for such as event?

I would also want to know something about the nature of drainage, sewage and solid waste system in your household/community.

19. Does your household/community have a drainage system installed? What type of drainage system is installed (look out for covered, open, earth, concrete, sewer, etc.)?
20. What can you say about the present state of drainage facilities in your household/community?
21. Have you experienced flood before? Do you still experience it? How often does your household/community get flooded?
22. Can you make a guess of the water levels in times of flooding? Are water levels comparatively high in your household/community?
23. In your household/community, how are wastewater handled? Are they channeled into rainwater drainage (gutter) or somewhere else?
24. Do you have a sewage storage tank in your household? If you do have, what is the occupancy level in the household/community? Do you think the sewage holding tank when used, is in good working order and adequate for the number of household/community members?
25. Sewage regularly taken by tanker to an approved Treatment Plant. Does your household/community keep records of waste transfers?
26. How are solid wastes treated in your household/community? Are they dumped into drainages (gutters)? Are solid wastes given much attention in your household/community?
27. Do you burn solid wastes in your household or private waste collectors take care of them? Are they recycled and/or reused?

28. Are there waste collecting bins, trash cans and basins in your household/communities for solid wastes? On a fair scale, what will you rate open dumping and littering of solid wastes in your household/community?

Sanitation and health of household/community

29. What can you say about your health and that of your household?
30. What do people (household members) feel is the most important health issue in the household/community?
31. Has any member of your household been hospitalized in the last 30 days? If yes, what was the cause of members' admittance to hospital?
32. Have you or any household/community member been diagnosed of hygiene-related disease in the past 30 days? If yes, can you recall the exact illness that was?
33. Is there evidence of fecal contamination outside and/or inside the household/community?
34. Where do infants/young children defecate in the household/community? What happens with the excreta in the household/community?
35. What is the diarrheal disease rate of children under five in your household/community?
36. How do diarrheal diseases affect household/community member's income?
37. When was the last time a family member had malaria?
38. What is the mortality rate of children under five years of age in your household/community?
39. How close are hand-washing facilities to the bathroom/latrine in the household?

Personal Hygiene and Sanitation Management Practices

40. Can you tell me about some of the personal hygiene and sanitation management practices of your household/community?
41. Do you or household/community members wash your hands after visiting the toilet and the urinal? How often do you do that? Has it for once skipped you to wash your hands after visiting the washroom?
42. Do children under five years in this household/community wash their hands after visiting the toilet/urinal? Do they do this on their own? Who assists them to do this hand washing?
43. When do household/community members normally wash their hands? Do they wash their hands before preparing food for the household?
44. Do you have soaps for hand washing? Do household/community members use them for hand washing?
45. Do you have waste containers in your household/community? Where do you put your waste when the containers are empty?
46. Are wastes collected in your household/community? How frequent are they picked? Do you suppose it is efficient at all?
47. Who is in charge of waste in the household/community?
48. Do you have a budget for waste collection?
49. When last did you or members of household/community take part in community cleaning exercises?
50. In your view, do you think measures put in place in your household/community are enough to address sanitation issues?
51. Are there any sanitation laws that abide you for which your household/community adhered to at all cost? If yes, who formulates them? Do

you believe these laws are effective and worth abiding at all? If yes, how effective are they, and who ensures that they are enforced?

52. Have you or a household/community member ever been charged for sanitation offences? If yes, describe/tell me about that experience.

53. Should there be stricter laws to enforce good sanitation practices in your household/community?

Personal Hygiene and Sanitation Management Practices

For staff of assembly

1. Can you tell me about some of the personal hygiene and sanitation management practices in this area particularly in Zongo communities like Aboabo?
2. How is the culture of hand washing like in these area?
3. Do children under five years in this household/community wash their hands after visiting the toilet/urinal? Do they do this on their own? Who assists them to do this hand washing?
4. Do you embark on hand washing campaigns in these areas? When last did you provide them with toiletries?
5. Who is in charge of waste in the household/community?
6. Are households/community members provided with waste containers?
7. Are wastes collected in these areas? How frequent are they picked? Do you suppose it is efficient at all?
8. Do you have a budget for waste collection?
9. Tell me about communal labour or community service practices in this area.
10. In your view, do you think measures put in place in this municipality/metropolis are enough to address sanitation issues?

11. Are there any sanitation laws that abide you for which your household/community adhered to at all cost? If yes, who formulates them? Do you believe these laws are effective and worth abiding at all? If yes, how effective are they, and who ensures that they are enforced?
12. Does the assembly ever charge or prosecute people for sanitation offences? If yes, describe/tell me about such experience?
13. Should there be stricter laws to enforce good sanitation practices in this area and the country at large?
14. Do houses have drainages system installed? What type of drainage systems are installed (look out for covered, open, earth, concrete, sewer, etc.)?
15. What can you say about the present state of drainage facilities in this area?
16. Have you experienced flood before? Do you still experience it? How often do households and communities get flooded?
17. Can you make a guess of the water levels in times of flooding? Are water levels comparatively high in other areas outside your municipality?
18. Are wastewaters channeled into rainwater drainage (gutter) or somewhere else?
19. Are there sewage storage tanks in this municipality/assembly? If there are, what should be the required occupancy level in households/communities? Do you think the sewage holding tanks when used, are in good working order and adequate for households/communities?
20. How regularly are sewage taken by tankers to an approved Treatment Plant?
21. How are solid wastes treated in this area (municipality/assembly)? Are they dumped into drainages (gutters)? Are solid wastes given much attention in your household/community?

22. How are solid wastes often treated in this municipality? Are they burnt, recycled and reused or private waste collectors take care of them?
23. Are there waste collecting bins, trash cans and basins in households/communities for solid wastes? On a fair scale, what will you rate open dumping and littering of solid wastes in your household/community?



APPENDIX D

Pictures on Nature and Practices of Sanitation



Figure 4: Nature of drainage and sewage system



Figure 5: Open drainage



Figure 5: Solid waste



Figure 6: sewage and solid waste manager