ENSIGN COLLEGE OF PUBLIC HEALTH

FACTORS CONTRIBUTING TO PREVALENCE OF OPEN DEFECATION IN TESHIE LEDZOKUKU MUNICIPALITY, GREATER ACCRA, GHANA

BY

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A Thesis Submitted to the Department of Community Health, School of Public Health in Partial Fulfillment of the Requirement for the Degree of Masters in Public Health

(187100138)

July, 2020

DEDICATION

This work is dedicated to my Son Martin Obinna Ike

ACKNOWLEDGEMENT

I thank God for his protection and grace. I thank the Management of Ledzokuku Municipal Assembly for their assistance in engaging the community. I thank my wife Gloria Ike and Son Martin Obinna Ike for their understanding and support during this Thesis Project. A special thanks to my Supervisor Dr. Reuben Esena for your continuous corrections and critique during this Thesis work and to all the Faculty and members of Ensign College of Public Health thank you. I thank Harriet Noye my research Assistant for helping me in data collection. Sincerely I am grateful to all the authors and publishers of the literatures used in this script, without which I would not have been able to complete my work.

DECLARATION

I hereby declare that this thesis has been the result of my own research, except references cited that have been duly acknowledged. It has never been submitted in part or full for any award of my intended degree.

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Contents

Abbreviation

WHO- World Health Organization

UNICEF- United Nations Children's Fund

JMP- Joint Monitoring Program

WASH- Water, sanitation and hygiene

SDG- Sustainable Development Goal

MDG- Millennium Development Goal

DALYs- Disability-Adjusted Life Years

UNFP- United Nations Fund for Population

SANIPATH- Sanitation Pathways

OD- Open Defecation

ABSTRACT

Introduction: Open defecation is the disposal of human faeces in fields, forests, bushes, open water bodies, beaches or other open spaces. The percentage of people without access to basic sanitation facilities in Africa was 44 percent in 2000 and 37 percent in 2010. Also 70 percent, or two out of three people, do not have access to a toilet, a staggering statistics couple with the fact that slum growth and urbanization is raising present a difficult situation. A common solution is to share toilet facilities through partnerships of landlord and tenants. However shared sanitation in the form of public or community latrines is a pragmatic way of increasing coverage.

Aim: This study seeks to examine factors associated with open defecation as well as the beliefs and perceptions towards open defecation.

Method: A cross-sectional study using quantitative approach to collect data from participants in Teshie Ledzokuku Municipality from 18years and above. Random sampling was used to choose four (4) electoral names from the total list of 11 (West Akromadeokpo, East Akromadeokpo, Nii Ashitey Akomfra, Okesekor, Aborle-Bu, Sutsurunor, Agblesan, Tsuibleoo South, Tsuibleoo Central, Tsuibleoo North, South Teshie Nuagua Estate, North Nuagua Estate). Furthermore STATA 14 (Statacorp LP, College Station, TX, USA) software was used to analyze the data. Ethical approval was sort from Ensign College of Public Health Ethical Review committee and Ghana Health service. A written consent form was filled by each participant before beginning any questioning.

Result: There are three hundred (300) participants. 63% of participant were 18-30years, 97% had some form education, 73% are either employed or self-employed, 41% live in household with less than 5 member and 77% have toilet facilities.

The study found that open defecation is practices by both those with toilet facilities (14%) and those without toilet (47%). Major reasons for open defecation are lack of toilet facilities, poverty and the preference to openly defecate.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Open defecation is the disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste (WHO and UNICEF, 2017). There are two types of toilet facilities including improved facilities; which comprises of flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs. Unimproved facilities are pit latrines without a slab or platform, hanging latrines or bucket latrines (WHO and UNICEF, 2017).

In 2015, about 5 billion people used an improved sanitation facilities that were not shared with other households, and thus are classified as having at least basic sanitation services. In addition, 600 million people (8% of world population) used improved but shared facilities that are classified as limited sanitation services. Majority of the 2.3 billion people who lacked a basic sanitation services either practice open defecation (892 million) or use unimproved facilities such as pit latrines without a slab or platform, hanging latrines or bucket latrines (856 million) (WHO and UNICEF, 2017).

The United Nations Millennium Development Goals include eight goals that all 191 UN member states have agreed to try to achieve by the year 2015. The seventh goal was to ensure environmental sustainability(WHO, 2018). Furthermore it was agreed that the proportion of people without access to safe drinking water and basic sanitation should be reduced by 50% between 1990 and 2015 (UNICEF, 2011). Although some countries were not able to achieve this goal, the Sustainable Development Goals became the new target goals to be achieved by 2030, under which goal number 6 is Water and Sanitation (United Nation Development Programme, 2019).

The WHO/UNICEF Joint Monitoring Program for Water Supply, Sanitation and Hygiene (JMP) has produced regular estimates of global progress on drinking water, sanitation and hygiene (WASH) since 1990. It has established an extensive global database and has been instrumental in

developing global norms to benchmark progress. The JMP was responsible for monitoring the 2015 Millennium Development Goal (MDG) target 7c5 and is now responsible for tracking progress towards the 2030 Sustainable Development Goal (SDG) targets related to drinking water, sanitation and hygiene (WASH) (WHO and UNICEF, 2017)

According to Joint Monitoring Program, Improved sanitation facilities are those designed to hygienically separate excreta from human contact. People should use improved sanitation facilities that are not shared with other households, these are three main ways to meet the criteria for having a safely managed sanitation service (SDG 6.2). The excreta produced should either be:

- treated and disposed of in the toilet premises,
- stored temporarily and then emptied, transported and treated off-site, or
- transported through a sewer with wastewater and then treated off-site.

If the excreta from improved sanitation facilities are not safely managed, then the people using it will be classified as having a basic sanitation service (SDG 1.4).

According to WHO-UNICEF report there are almost 900million people still practicing open defecation in 2017 (WHO and UNICEF, 2017). Although a lot of progress has been made on provision of adequate toilets and equitable sanitation, the Joint Monitoring Program report data in the 2017 showed that Open defecation has decreased and billions of people lives have improved, this has translated into better health and diseases inhibition.

Furthermore the 2017 report "No child should die or get sick as a result of drinking contaminated drinking water, being exposed to other people's excreta, or having no place to wash their hands. No child should have to stay away from school for lack of a clean toilet and privacy. No mother or newborn should contract an infection from an unsanitary delivery room when they are most vulnerable and no one should suffer the indignity of having to defecate in the open" (WHO and UNICEF, 2017).

Even though from the year 2000, a lot of progress has been made, especially in the provision of toilet facilities to the most rural communities and those who cannot afford to build their own

toilet but would like to own such facility. This is why the 2030 Agenda for Sustainable Development recognize safe drinking water, effective sanitation, and good hygiene (WASH) both as an end in itself and as a driver of progress on many of the SDGS, including health, nutrition, education and gender equality(WHO and UNICEF, 2017).

It is important to study the progress that has been made thus far and why people still defecate in the open, because certain intervention can either be stopped or changed to suit the new challenges encountered especially when it has to do with culture, norms, attitude and beliefs. The new Sustainable Development Goal has an explicit expression of ending Open defecation by 2030 (WHO and UNICEF, 2017). This goal has to be comprehensive and not only focused on building toilet but educational too, so that the community can understand the benefit of using the toilet and the risk of practicing open defecation.

Some 842 000 people in low- and middle-income countries die as a result of inadequate water, sanitation, and hygiene each year, representing 58% of total diarrhea deaths. Poor sanitation is believed to be the main cause in some 280 000 of these deaths. Diarrhoea remains a major communicable disease that is largely preventable. Clean water, improved sanitation, and hygiene could prevent the deaths of 361 000 children under 5 years each year. Open defecation perpetuates a vicious cycle of disease and poverty. The countries where open defection is most widespread have the highest number of deaths of children under 5 years as well as the highest levels of malnutrition and poverty, and huge disparities in wealth (www.sanitation2008.org, 2008).

From Edwin Chadwick's report on the sanitary conditions of the labouring population of great Britain (The Health Foundation, 2018) to John Snow’s investigation into the cholera epidemic in 19th century London (Hempel, 2013), sanitation has been perceive as a basic intervention. In 2002 the estimated disease burden from water, sanitation, and hygiene is 4.0% of all deaths and 5.7% of the total disease burden (in DALYs) occurring worldwide, taking into account diarrheal diseases, schistosomiasis, trachoma, ascariasis, trichuriasis, and hookworm disease (Prüss *et al.*, 2002). However a recent study conducted on the same risk exposure in 2010 only attribute 0·9% of global DALYs resulting in fall in rank between 1990 and 2010 (Lim *et al.*, 2012).

Improvements of sanitation alongside water and hygiene infrastructure and appropriate health-seeking behavior are necessary for achieving sustained control, elimination, or eradication of many neglected tropical diseases (Freeman *et al.*, 2013). According to WHO lack of access to water, sanitation and hygiene is the third most significant risk for environmental burden of disease for children and adolescents (World Health Organization, 2019). Poor wastewater management coupled with lack of sanitation facilities has aggravated the sanitation challenges in developing countries (Montgomery and Elimelech, 2007). This has led to diarrhoeal disease responsible for killing around 525 000 children under 5years every year out of the 1.7billion case (World Health Organization, 2017)

in Africa, the percentage of people without access to basic sanitation facilities was 44 percent in 2000 and 37 percent in 2010, and In Sub-Saharan Africa, in particular, 70 percent, or two out of three people, do not have access to a toilet, a staggering statistic (JICA, 2013), coupled with the fact that slum growth and urbanization is raising (United Nations Fund for Population Activities, 1977) present a difficult situation. A common solution is to share toilet facilities through partnerships of landlord and tenants (Schaub-Jones, 2006). However shared sanitation in the form of public or community latrines is a pragmatic way of increasing coverage, but it is currently not deemed “improved toilet facility” (Mazeau *et al.*, 2014)

Ghana is a middle income country with a growing population of 29 million people and is one of the most urbanized countries in Africa and almost half the country now lives in towns and cities, and of these less than one fifth has access to at least a basic sanitation service (WSUP, 2013). This has serious consequence for people’s dignity, health and ability to work or attend school.

This study seeks to quantitatively examine the factors associated with open defecation as well as their beliefs and perceptions toward open defecation. Furthermore the preference of the respondent to use toilet facility or open defecation.

1.2 Problem statement

Open defecation refers to the practice whereby people go out in fields, bushes, forests, open bodies of water, or other open spaces rather than using the toilet to defecate. Open defecation poses a serious threat to the health of children and Adult. It exposes women to the danger of physical attacks and encounters such as snake bites. Poor sanitation also cripples national development: workers produce less, live shorter lives, save and invest less, and are less able to send their children to school (UNICEF, 2014).

Open defecation practices have been decreasing steadily, From 2000-2015, the number of people practicing open defecation declined from 1,229 million to 892 million, an average decrease of 22 million people per year worldwide. All Sustainable Development Goals (SDG) regions has seen a drop in the number of people practicing open defecation, except for sub-Saharan Africa, where high population growth led to an increase in open defecation from 204 to 220 million, and in Oceania, where open defecation increased from 1 to 1.3 million (WHO & UNICEF JMP, 2018).

The World Bank has invested $150m in providing toilet facilities in Greater Accra metropolitan Area because most of the household do not have portable toilet facility (Adogla-Bessa, 2017). Also Ghana has embarked on a policy to make Accra a clean city by 2020 (MyJoyonlie, 2019). This shows a significant investment in Ghana sanitation and infrastructure.

Sanitation is one of the major areas used in inhibiting diseases and sickness. So, having a portable toilet has to be the right for every citizen because it is inhumane to practice open defecation (Media, 2018).

Open defecation leads to fecal matter contamination of vegetable produce through the watering of Vegetable plants, this is one of major exposure from the Sanipath research (Antwi-Agyei *et al.*, 2015).

Open defecation has a serious consequence on our tourism industry and Ghana losses $79m annually from it practice (‘Open-defecation : An enemy to tourism in Ghana - News Ghana’, 2010).

A key health challenge in the area is open defecation which need to be addressed. So, there is the need to analyze the factors contributing to the prevalence of open defecation in Teshie under the Ledzokuku Municipality. These communities live close to the sea or large drains both of which tend to be places conducive for open defecation. There are instances where those with access to toilet facility will prefer to use the seaside, saying *"I go to where there is 'air condition' (meaning sea breeze), and that is the beach. Or when I use the beach, I don't need to pay anyone or think about the smell that would be on my body after I have used the place,"* (Okertchiri, 2008). So this is a genuine problems that needs to be understood.

Open defecation is a public health concern in Teshie Ledzokoko municipality, this research seeks to determine factors that influence open defecation using empirical data. Also household attitude towards open defecation would be investigated.

1.3 Rationale of Study

Ghana is expected to achieve Sustainable Development Goal number 6. "Ensure access to water and sanitation for all by 2030" also Goal 6 target 5 state that 2.4 billion people lack access to basic sanitation services such as toilets and latrines globally (WHO and UNICEF, 2017). In 2017, the Ghana government established a ministry for sanitation and water resources to ensure improvement in the living standards of Ghanaians through increase access to and use of safe water, sanitation and hygiene practices and sustainable management of water resource.

Most of the study on sanitation in Ghana ranges from household needs for improved sanitation and people willing to pay for improved sanitation services (Atuahene, 2010) (Obeng *et al.*, 2015) (Amfo-Otu, Richard; Debrah, Edward Waife; Adjei Kwakwa, Paul; Yeboah, 2012) and a few studies on the factors affecting open defecation as well as it association to behaviors and perception (Rhoda Afisah Kotomah, 2018). Due to this gap, this study tend to focus on the factors influencing open defecation after a toilet facility has been provided as well as the socio cultural issues associated with open defecation. This study provides a baseline quantitative data for policy formulation and implementation on sanitation, mainly intervention for open defecation.

1.4 Conceptual Framework

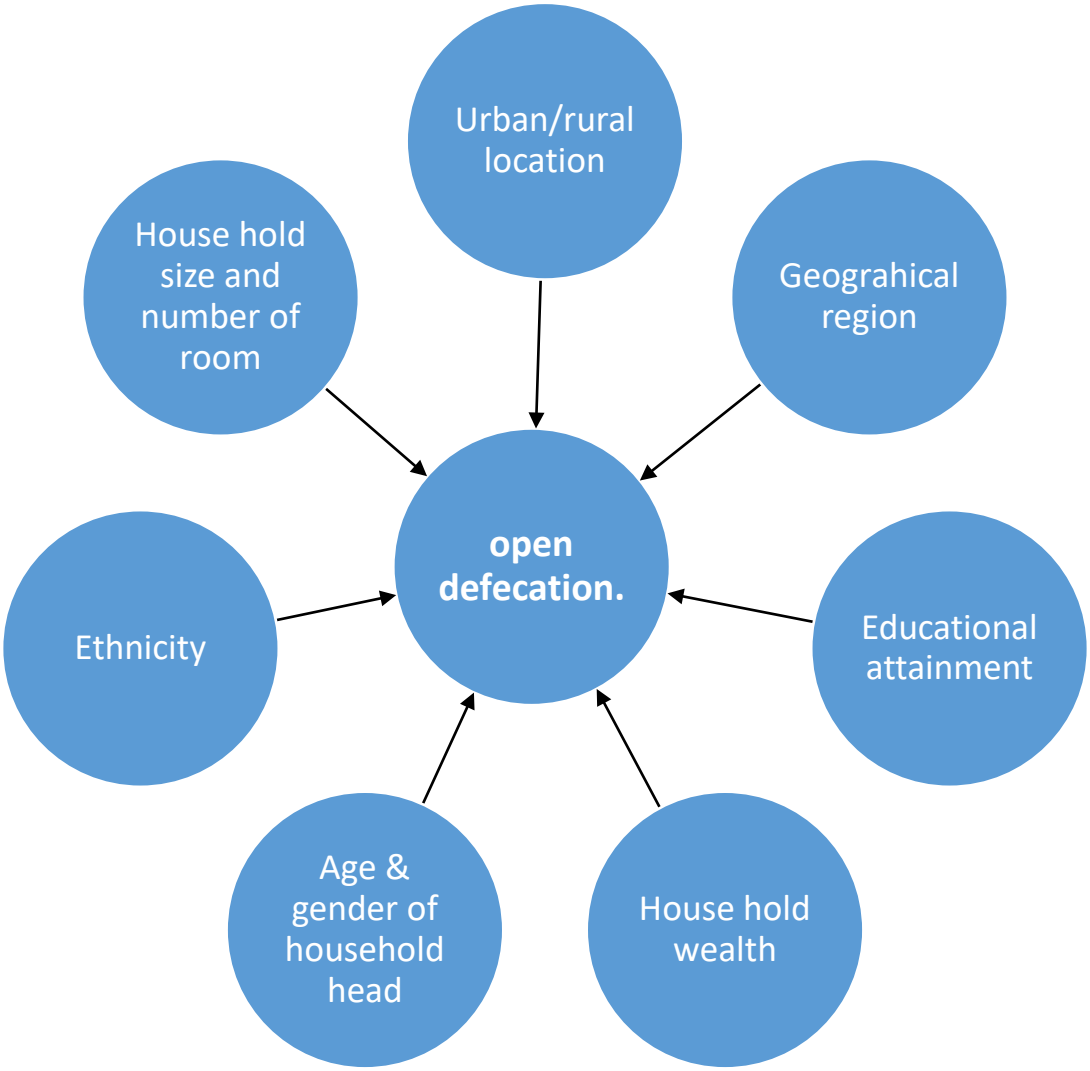

Figure 1.1 Conceptual Framework on factors contributing to open defecation

The conceptual framework (Figure 1.1) shows the various factors that influence the practices of open defecation as follows:

- **Urban/rural location**

Though open defecation is predominantly a rural phenomenon, it is also practice by urban population in Sub-Saharan African. Although both Urban and rural dwellers might have the same

reason for open defecation practices. The high population distribution in the urban community makes it a little difficult to practices open defecation, unlike the village with lesser population.

- **Geographical region and Ethnicity**

Seaside and beaches are some of the common area used for open defecation, so those living close to the sea tend to practice open defecation more.

- **Educational Attainment**

All those with education are less likely to practices open defecation compare with those with no formal education. Also the rate decreases as the educational level increase.

- **House hold wealth**

Those earning less are likely to practices open defecation compare to those earning more. Also as household wealth increases the family tend to afford more and can build themselves a toilet.

- **Age & Gender of household head**

Men are more likely to practices open defecation than women, and so the man might not boarder about the family member place of convenience thereby creating a situation where the other family members will open defecate.

- **Household size and number of room**

Also household with fewer members are less likely to practices open defecation because with fewer person the toilet is easier to keep clean.

1.5 General Objective

The general objective of this study to analyze the factors contributing to prevalence of open defecation in Teshie Ledzokuku Municipality.

1.6 Specific Objectives

The specific Objectives of this study are to:

1. Analyze the demographic characteristics of open defecation in Teshie Ledzokuku Municipality.
2. Analyze perceptions of open defecation and hand washing in Teshie Ledzokuku Municipality
3. Find the link between how parents dispose children stool and open defecation.
4. Analyze the reason for practices open defecation in the Municipality.

1.7 Research Question

1. What are the determinants factors of open defecation?
2. What are demographic characteristics of open defecation in Teshie Ledzokuku Municipality
3. What are the perceptions of people towards open defecation and hand washing in Teshie Ledzokuku Municipality?
4. Is there a link between how parents dispose of children stool and them practicing open defecation?
5. What are the reasons for practices of open defecation

1.8 Profile of Study Area

Physical and Natural Environment

Figure 1.2 shows the total land area of LEKMA, estimated to be 50 square kilometers. The municipality is bounded on the south by the Gulf of Guinea, stretching along the railway line into Sakumono. It is bounded on the East by the Spintex Road all the way to Coca Cola Roundabout. To the north by Motorway through to the Tetteh Quarshie Interchange (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

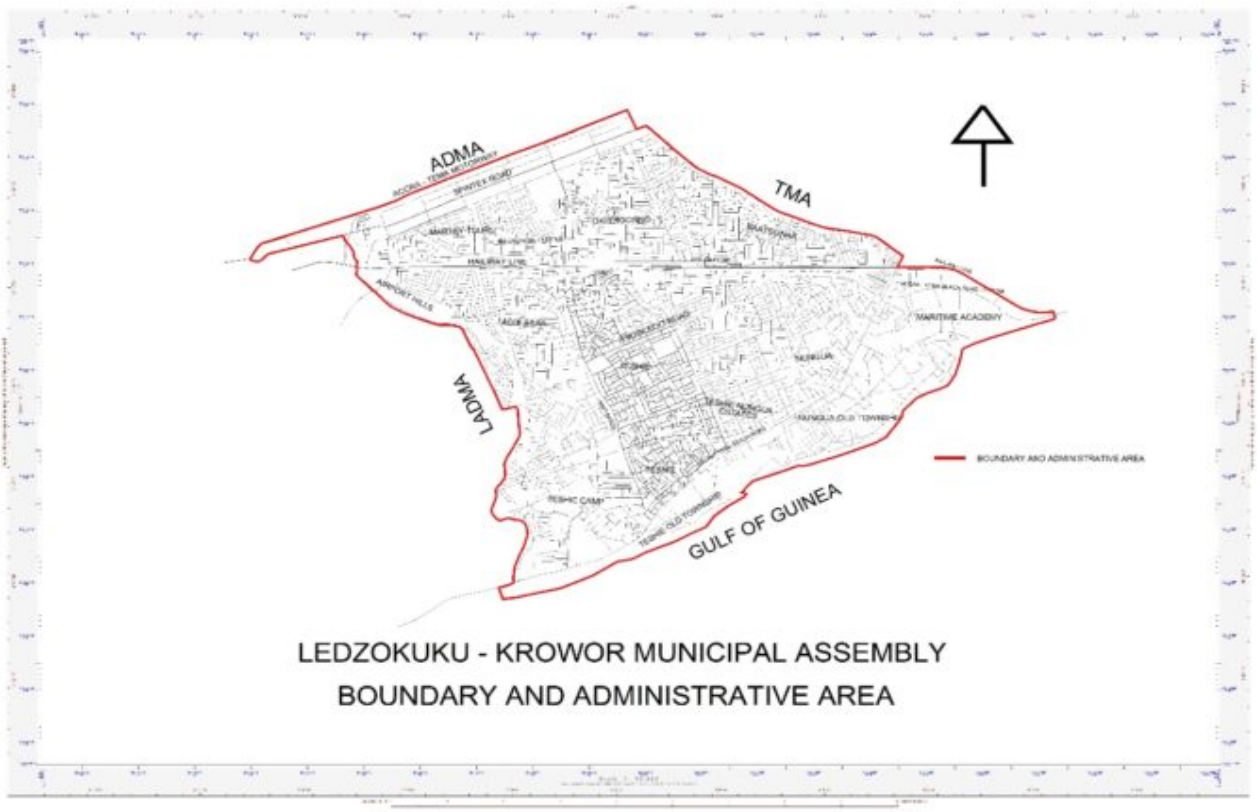

Figure 1.2 Map of Ledzokuku-Krowo Municipality.

The Homowo Festival

Homowo in Ga means hooting at hunger, it is celebrated from August to September through sprinkling of Kpokpoi fish by Ga community which includes Teshie and Nuagua. It is done as an appeal to the gods and ancestors for spiritual protection, procession of twins through the principal streets, traditional drumming and dancing and general merry making. There is a ban on several activities like noisemaking a month before the festival. The climax of the festival start from 12 noon to 6:00pm where any woman, no matter the status, should accept a hug from a man on the festival street (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Death

Reincarnation is a deeply held believe by the Ga's, the dead can be born again but only in their families of birth. This means that a grandfather can come back as a grandson or a dead first child as a second child. This reincarnation believes makes childlessness an appalling curse as it blocks the whole line of reincarnation. (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

GAMA Project

The Ministry of Local Government and Rural Development (MLGRD) with sponsorship from the World Bank created an intervention for low-income areas called GAMA-SWP (Greater Accra Metropolitan Area Water and Sanitation Project) with the main objective of increasing access to portable water and sanitation. Also it aims to reduce the incidence of open defecation and improve the hygiene situation in selected schools.

The project aims to assist Landlords of Teshie and Nuagua to build household toilets at half price and also construct institutional toilets for some selected basic schools in the Municipality (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Sanitation

Both Teshie and Nuagua has sanitation issues but Teshie is worse because it is situated at the interception of the lagoon and the sea, so the waste from the lagoon is brought upstream and

deposits on the beach (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Fish Processing

Marine fishing is the main type of fishing in Teshie-Nungua. Various types of fishes are caught including Tandora, Cassava fish, Burito, Bumper, Tuna (Atlantic little tuna, Spigacer, Chuv Mackerel), Anchovies, Thread fin, Shad, etc.

Women do most of the Fish processing (smoking, salting and drying) in the municipality. Smoking is one way of processing and preserving fish. After processing it is wrapped in clean brown paper sheets and again with polyethylene in a waterproof and placed inside an airtight container to prevent the growth of moulds and rodent attack, so that during the lean season, and when market prices are favorable, it can be sold at a higher market premiums" (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Sanitation and Waste Management

Since the inception of ZoomPak transfer station waste management has fairly improved in the Municipality, in addition to the monthly National Sanitation Clean-Up Exercises. The Transfer Station at Fertilizer Area has reduced the time used by refuse trucks to go to the dumping site, thereby increasing the number of trips per truck per day.

Factors contributing to the waste management problem include:

- Poor sanitation strategy and lack of toilet facilities
- Lack of education on sanitation for individuals, households and communities
- Increasing number of squatters
- Poor funding (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Road Network and Conditions

Teshie-Nuagua beach road and Spintex road are the two major corridor roads, both link the municipality to the La Dade Kotopon Municipal Assembly. The roads are not wide enough to accommodate large volume of vehicular traffic, so there is congestion most hour of the day on both roads (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016).

Health

The three types of health facilities in the Municipality includes hospital, health centres/health post and others, mainly grouped under government and private. Currently there are a total of 9 health facilities made up of one (1) health centre/post, four (4) hospitals, and four (4) other low hierarchy facilities such as clinics etc, offering services ranging from out-patient and in-patient, X-Ray, laboratory, pharmacy, nutrition, public health services; reproductive and child health services.

Hospitals such as the Family Health, Manna Mission, Inkoom and Lister Hospitals provides obstetric and gynecological services (*About Ledzokuku Krowor Municipal Assembly : Ledzokuku Krowor Municipal Assembly*, 2016)

1.12 Scope of the Study

Due to finance and time constraints the research will focus mainly on analyzing the factors contributing to prevalence of Open defecation. The respondents will be household residents above 18year within the Teshie Ledzokoko municipal area.

1.13 Organization of the study

There are six chapter to this research. Chapter One includes background to the study, the problem statement, rationale of the study, research questions, objectives, profile of the study area and organization of the study. Chapter two contains a review of relevant literature. Chapter three describes the research methods and study designs as well as sources of data. In Chapter four the analysis and interpretation are presented. Chapter five provides the discussion whiles summary,

conclusion, policy recommendations and limitations of the study are contained in the final chapter six.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review in this chapter focuses on the works, intervention, articles and research by others whose findings are focuses of open defecation and the impact of owning toilet facilities. This section focuses on some of the determinant factors of open defecation, community beliefs and perception towards open defecation, consequences of open defecation and gains made globally on open defecation.

2.2 Determinant factors of open defecation.

According to Osumanu, Kosee and Ategeeng, six factors were positively significant (Household size, occupation, income, education, traditional norms, beliefs and ownership of toilet facility) in determining open defecation in the WA municipality of Ghana. It was found out that owning toilet facility is not a priority for these household (Osumanu, Kosoe and Ategeeng, 2019).

It will be interesting to evaluate the impact of migration from WA Municipality to Accra city (Tenkorang, 2014) for job opportunity, a factor influencing open defecation because these migrants already practice open defecation, also they reside in low income urban areas like Teshie without proper sanitation infrastructure for household toilet (Tsikata, 2013).

Research findings in Kenya shows that poverty is the most significant predictor of open defecation (Njuguna and Muruka, 2017). Comparing Njuguna and Muruka findings to Tamil Nadu where open defecation is common practice despite the presence of household toilet (Yogananth and Bhatnagar, 2018). So being poor should not be the most significant predictor because these people were not using a toilet they own. I would like to analyze cultural and behavioral issues because different people do same thing for different reasons.

According to the UNICEF-WHO report India has a GDP per capita higher than 55 countries but 46 of them have lower open defecation rates than India. Correspondingly, poverty cannot serve as an explanation because the JMP data shows that amongst 21 countries that have a higher

proportion of the population living below $1.25 a day, 19 countries have lower OD than India (Majlesi *et al.*, 2013)

In Nigeria open defecation practice is significantly influenced by location of household, geo-political region, wealth index as well as the education of household head (Abubakar, 2018). It is interesting to consider the location of Teshie communities because it can be an influencing factor on open defecation since it is located close to the sea'.

2.3 Community beliefs and perception towards open defecation

Research in Zambia identified Taboos, including prohibition of different generations of family members, in-laws, and opposite genders from using the same toilet as major taboo thereby encouraging the practices of open defecation (Hamer *et al.*, 2016). This makes sense because people leaving in low income urban communities like Teshie have different generations of family members living together.

Also in Eastern Zambia the research focused on Men's believe and knowledge about open defecation and its impact on public health because it is male that build the toilet (Thys *et al.*, 2015).

India has one of the highest open defecation rate in the world, the researchers found beliefs, perception, values, and norms about purity, pollution and caste as some of the most influencing factors on open defecation. It was found out that open defecation makes one pure and use of toilet facility is an impure practice. Another beliefs that was predominately influencing open defecation in India is untouchability been the practice of certain ethnic group not excavating their latrine because it is a job done by the Dalits (Diane Coffey, Aashish Gupta, Payal Hathi, Dean Spears, Nikhil Srivastav, 2017).

Family members, peers, neighbours and other community members defecate in the open, making it a normal daily routine and behavior, and nothing to be ashamed of especially by kids (Majlesi *et al.*, 2013)

Some additional findings by Tarraf (2016) in India on perceived advantage of open defecation

- 70% of those with access to toilet practice open defecation and 45% of the respondents say that open defecation gives them pleasure and comfort.
- It is closely link to rising early and a sign of being industrious and healthy through breathing fresh air and taking a walk.
- It is not seen as health threat, also open defecation is not necessarily better for their child health because open defecation is as good as latrine use. In general health threat is not a major reason like comfort and convenience when deciding to build latrine.
- It is believed that one cannot eat and defecate under the same building, so one has to move as far as possible to defecate. This makes open defecation linked to Purity in Hinduism (Majlesi *et al.*, 2013).

2.4 The consequence of open defecation in the Teshie community and Ghana

2.4.1 Health

When communities practice open defecation in drains and fields, the fecal matter would be washed into the water bodies without been treated. The use of this contaminated water source without boiling it leads to water borne diseases such as cholera, typhoid, diarrhoea and trachoma. (Kukreja, 2019).

Also the act of open defecation attract flies, which carries fecal matter that is subsequently drop on food and fruits as it flies around. When this contaminated food are ingested unknowingly it causes chlorea; in this case the flies act as direct transmitters of disease.

Children under 5 years are affected the most from ingestion and other problems associated with human waste, they are very susceptible to diseases. The presence of these disease caused by fecal matter make them loose appetite, this in turn leads to malnutrition (Kukreja, 2019).

2.4.2 Gender

Women would prefer to relieve themselves in the night thereby exposing themselves to the risk of attack and rape, this also affect their dignity and can lead to unwanted pregnancy or getting infested with HIV (Majlesi *et al.*, 2013)

2.4.3 The Economy

Ghana tourism loses $79m annually because of open defecation. Sites that is being visited for tourist purposes are facing the problems of open defecation in open site. This reduces the value that tourist get and would not speak well of their experience to friends, who would have loved to visit, resulting in loss of capital inflow. Also patronage by foreigners to the beaches would be affected due to fear of contracting a diseases. In addition to all the money that the Government will spend in controlling disease outbreaks ('Open-defecation : An enemy to tourism in Ghana - News Ghana', 2010).

2.4.4 Poverty

Open defecation often leads to the virtuous circle of poverty because the practice of open defecation contaminate the soil, air and water bodies creating large exposures for the community. Since children are most susceptible they are easily ruined or blighted causing them to drop out of school. Without proper school these children do not have the capacity to compete in the work environment leading them to do menial labor. Also the little money they can safe are mostly used to care for their sick parent, continuing the virtuous circle (Majlesi *et al.*, 2013)

2.4.5 Global open defecation

The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) plan to end open defecation 2030. And to achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations (WHO and UNICEF, 2017).

Some information on global open defecation from WHO/UNICEF

- 39 per cent of the global population (2.9 billion people) used a safely managed sanitation service; that is, excreta safely disposed of in situ or treated off-site.
- Estimates for safely managed sanitation were available for 84 countries (representing 48 per cent of the global population), and for five out of eight SDG regions4.
- Two out of five people using safely managed sanitation services (1.2 billion) lived in rural areas.
- 27 per cent of the global population (1.9 billion people) used private sanitation facilities connected to sewers from which wastewater was treated.
- 13 per cent of the global population (0.9 billion people) used toilets or latrines where excreta were disposed of in situ.
- Available data were insufficient to make a global estimate of the proportion of population using septic tanks and latrines from which excreta are emptied and treated off-site.
- 68 per cent of the global population (5.0 billion people) used at least a basic sanitation service.
- 2.3 billion People still lacked even a basic sanitation service.
- 600 million people used a limited sanitation service; that is, improved facilities shared with other households.
- 892 million people worldwide still practiced open defecation. (WHO and UNICEF, 2017)

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter presents the methods, materials and analysis used to answer the research questions. This section will profile the study population and variables, sampling, data sources, handling and analysis as well as ethical considerations and limitation of study.

3.2 Research Method and design.

The research design refers to the overall strategy that can integrate the different components of the study in a coherent and logical way, it constitutes the framework for the collection, measurement, and analysis of data (Lechtenberg, 2019) while research methods are the "strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic" (Posker, 2020), this strategy helps to meticulously address the main research question and the general research questions.

Although mixed methods is an emergent methodology of research that advances the systematic integration of quantitative and qualitative data within a single investigation or sustained program of inquiry. The basic premise of this methodology is that such integration permits a more complete and synergistic utilization of data than do separate quantitative and qualitative data collection and analysis (Creswell, 2013).

In this study, the researcher used quantitative method to collect data from participants for all research question

3.3 Data collection techniques and tools

A cross sectional survey was done by the researcher and research assistant for four weeks in Four (Tsuibleoo Central, Tsuibleoo North, South Teshie Nuagua Estate, North Nuagua Estate) out of Eleven of the Teshie Ledzokuku Municipality during the month of February 2020. To enable

more participant the research assistant asked the questions to those who cannot read or translate into their GA language so that a more reliable data was collected.

The questionnaires used was self-administered and self-constructed. It enabled the researcher to evaluate the relationship between the predicting variables and the response variable. Some of the predicting variable used are educational level, age, gender, occupation, accessibility of toilet facility etc while the response variable will be open defecation practice.

3.4 Study Population

The research study population includes all household communities in Teshie Ledzorkoko, Accra. Especially compounds and house head, wife or spouse and children above 18year.

3.5 Study Variables

These are the variable that will be included for the scope of the study:

Dependent Variable

- Open defecation

Independent Variables

- Socio-demographic factors- Age, gender, educational level, marital status
- Socio-economic factors- Income, employment status
- Beliefs and perception toward open defecation.

3.6 Inclusion and exclusion criterial

3.6.1 Inclusion criteria

Household heads and members of the household above 18 years of age living within the Ledzokoko Municipality, also participants was informed that this is a voluntary participation before asked any question.

3.6.2 Exclusion criteria

Residents below the ages of 18 years in Teshie Ledzokuku Municipality Greater Accra Ghana.

3.7 Sampling Techniques

Normally it would be impractical to study a whole population, when doing a questionnaire survey. Sampling is a method that allows researchers to infer information about a population based on results from a subset of the population, without having to investigate every individual. Reducing the number of individuals in a study reduces the cost and workload, and may make it easier to obtain high quality information, but this has to be balanced against having a large enough sample size with enough power to detect a true association (Saran Shantikumar, 2018).

3.8 Sample Size Calculation

Using the prevalence rate for open defecation in the study area of 20%, confidence interval of 95%(CI95%), margin of error (e) 5% and a 5% non-response rate, sample size (n) calculation will be as follows:

Sample size (n) $= \frac{Z^2 P(1-P)}{e^2}$

Where Z = confidence interval at 95% (standard value of 1.96)

P = estimated prevalence rate of open defecation (20%)

e = margin of error (5%)

n $= \frac{1.96^2 \times 0.20(1-0.20)}{0.05^2}$

n = 246

Adjusting for 10% non-response rate

$$\frac{10}{100} \times 246$$

25

Adjusted sample size $= 246 + 25$

$$= 271$$

Actual total samples used is 300 participants.

3.9 Pre-testing

"A pre-test is where a questionnaire is tested on a (statistically) small sample of respondents before a full-scale study, to identify any problems such as unclear wording or the questionnaire taking too long to administer, eliminate poor wording" (Association, 2019). The researcher questionnaires and interview guides was pre-tested at Nuagua, because it has similar characteristics with Teshie like language, type of trade, markets; a minimum of 25 household were conveniently selected.

3.10 Data Handling

According to data handling website (Hyötyläinen and Orešic, 2013). Data handling is the process of ensuring that research data is stored, archived or disposed of in a safe and secure manner during and after the conclusion of a research project. The researcher aims to do the following

- Label each data and tape recording with a unique code.
- Check completed questionnaires for completeness and consistency.
- Ensure that data is entered on same day on the Excel (2010).
- Playing audio recordings of the interviewer face to face with participant for completeness.
- Transcribe recordings as soon as possible.

3.11 Data analysis

The collected data was analyzed with STATA 14 (Statacorp LP, College Station, TX, USA). This data will be analyzed by means of inferential statistics that includes frequencies, means, standard deviation, percentages, correlations (descriptive statistics) and chi squares associations and logistics regression analysis (inferential statistics). Chi square will be used to show the association between variables (dependent and independent) while multiple logistics regression will be used to determine the odds ratio among the variable. A variable would be considered statistically significant if the p-value is less than 0.05.

3.12 Ethical Consideration

Ethical clearance was obtained from Ensign College of Public Health Review board, and permission was sought from the district assembly of Ledzokuku Municipality before the research commenced. Participants consent was given before they were asked any question because the research participation is voluntary. To ensure confidentiality no name was used on the research questionnaire rather only identification number was used. Data will only be accessed by Principal investigator, research assistant and supervisor.

3.13 Results

3.13.1 Expected Outcome

This study is expected to aid in the planning of interventions and policies towards Open defecation, it will help in understanding the underlying cause of open defecation.

3.13.2 Dissemination Plan

This study will serve as a resource for the work of other Ensign College of Public Health Students and other colleges and Universities throughout the country. The outcome of the research will be disseminated on the College's website and sent to Ledzokuku Municipality office, so that the Municipality can know the factors affecting Open defecation and will plan or put policies in place to help eliminate Open defecation. Also the PI is willing to work with the

Municipality on any initiative they decide on regarding reducing open defecation. Additional dissemination will occur through presentations at conferences and journals.

3.14 Limitations of the Study

The limitations to this study was that some of the participants have difficulty in expressing themselves in English even when we try to help them it was a bit difficult even though my research assistant can speak their local language. Also we get the impression that some of the participants are not willing to tell the truth especially the senior citizens.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the result, interpretation and analysis of the data collected. These results are presented in analytical forms of tables and graphs, chi-square test of significance and logistic regression. The chapter is presented in line with the research questions and study objectives.

4.2 Demographic characteristics of respondents

Tables and graphs depict the various characteristics of the study population like the frequencies, percentages, means and standard deviations. The age of participants range from 18 years to 72 years with an average age of 30.8 year ± 12.03. The average household size was 8 ±5.16. Household hold ranges from 3 to 30 persons. Majority (39%) of our participants earn less than Ghc500 per month

4.2.1 Age Distribution

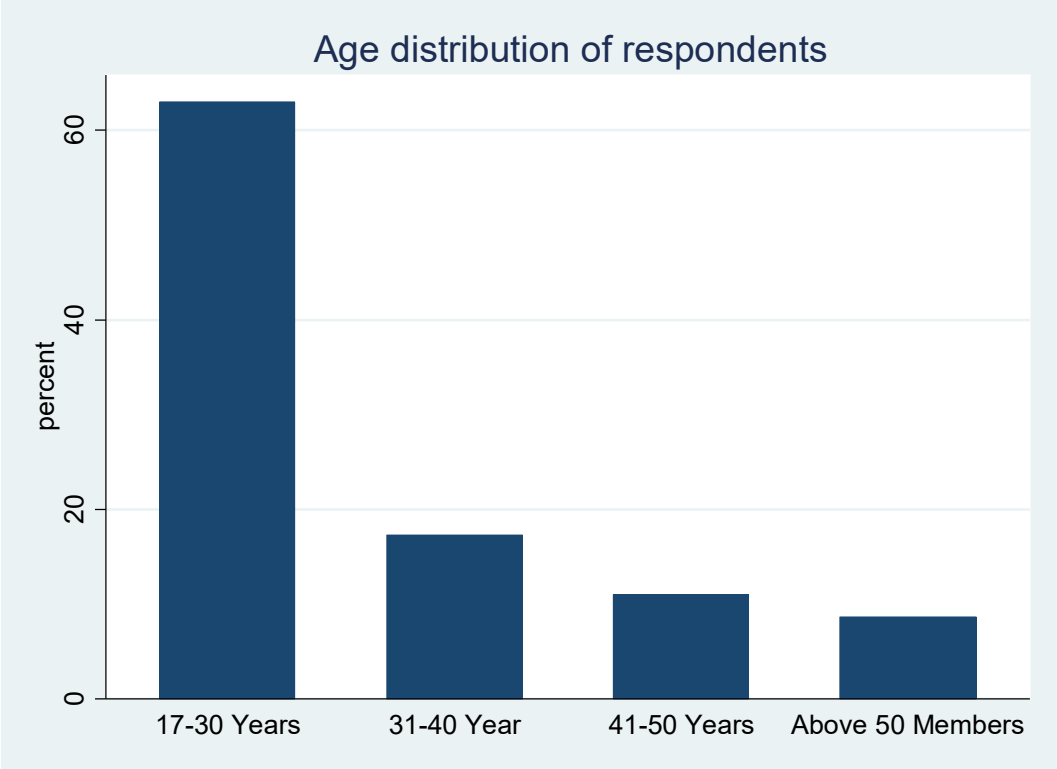

Figure 4.1: Age distribution of respondents

Figure 4.1 shows the age distribution of participants. Majority (63%) of the participants is between 18years and 30 years. Also the least group (8.7%) is made up of those above 50 years. The remaining groups are 31years to 40years and above 50years making up 17.3% and 11% respectively.

4.3 Data is presented in frequencies (n) and percentages (%)

Table 4.1: The distribution of the demographic profile of respondents

Variables	Categories N=300	Frequency (%)
Sex	Male	156 (52%)
	Female	144 (48%)
Age	18-30 Years	189 (63%)
	31-40 Years	52 (17.33%)
	41-50 Years	33 (11%)
	Above 50	26 (8.67%)
Marital Status	Single	197 (63.67%)
	Married	67 (22.33%)
	Separated	27 (9%)
	Divorce/Widowed	9 (3%)
Educational background	No formal education	7 (2.33%)
	Basic level	99 (33%)
	Senior/Voc/Technical level	113 (37.67%)
	Tertiary	81 (27%)
Facility of interview	Household	86 (28.67%)
	Non-household	214 (71.33%)
Family monthly income	<500	116 (38.67%)
	500-1000	63 (21%)
	Above 1000	42 (14%)
	Nothing	79 (26.33%)
Number of household	1-5 Members	124 (41.34%)
	6-10 Members	120 (40%)
	11-20 Members	46 (15.33%)
	Above 20 Members	10 (3.33%)

Source: Field data, 2020

From table 4.1 above, Male constitute 52% of the total participants while Female were 48%. Majority (64%) of the participants are single, while 22.3% are married and the rest is share among Separated and Divorce/widowed of 9% and 3% respectively.
Senior/Vocational/Technical level made up majority (38%) of the participants' educational background. Household with 1-5members and 6-10members constitute the high proportion of household number making up 41.3% and 40% respectively.

4.3.1 Occupation of Respondents

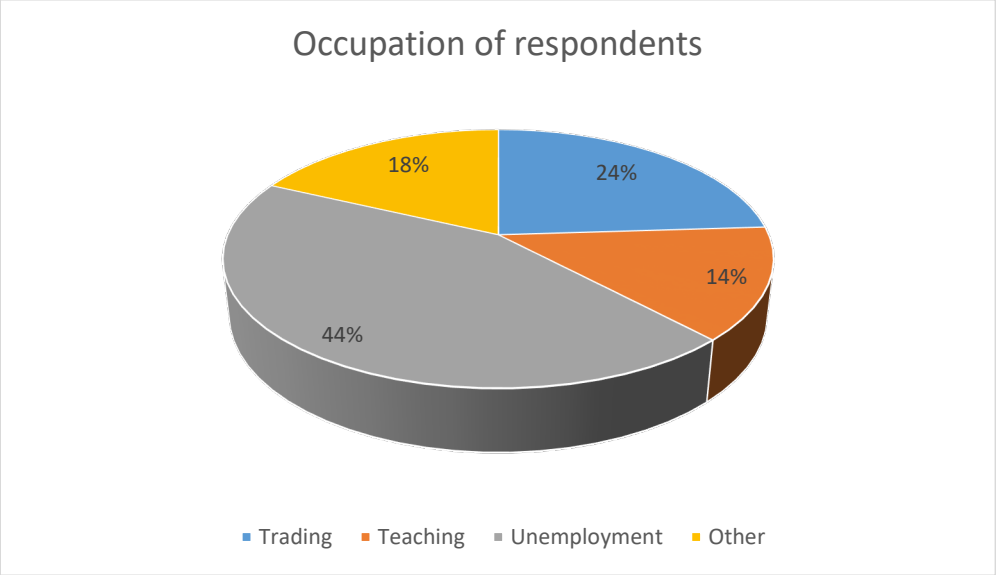

Figure 4.2: Occupation of respondents

From figure 4.3 unemployment constitute majority (44%) of the participants whereas Trading 24%, Teaching 14% and other of 18% is made up of Technicians, carpenter, seaman, hairdresser, seamstress, mason, driver and farming.

4.3 Determinant factors of open defecation in Teshie Ledzokuku Municipality

The findings for the association or determinant factors of open defecation using percentages and frequencies as well as test of association and multivariate analysis are presented below.

4.3.1: Open defecation and toilet usage among households

Table 4.2 Analysis of open defecation and toilet use by household

Variables	Categories N=300	Frequency (%)
Toilet facility in the household	No	70 (23.33%)
	Yes	230 (76.67%)
Use of toilet facility in the house	No	60 (20%)
	Yes	240 (80%)
Type of toilet facility	Water Closet	186 (62%)
	Public toilet	1 (0.33%)
	KVIP	68 (22.64%)
	Latrine	11 (3.67%)
	None	34 (11.33%)
Open defecation practice	No	235 (78.33%)
	Yes	65 (21.67%)
Use of the toilet facilities	Always	162 (54%)
	Sometimes	138 (46%)
Number of persons using a toilet facility	1-5	143 (47.67%)
	6-10	107 (35.67%)
	11-20	50 (16.66%)

Source: Field data, 2020

From the table above, 76.7% of household has toilet facility and 80% use the toilet facility in their household, while 20% do not use their toilet facility. Majority (62%) of the household has water closet, 23% has KVIP while latrine users and those without toilet are 4% and 11% respectively.

Only 22% of our participants practices open defecation, a majority of 78% do not practices open defecation and of these percentage only 54% use their toilet always while the rest only use their toilet sometimes.

Toilet facility with one to five users has a majority of 48% while six to ten users and 11-20 users are 36% and 16% respectively.

4.3.2 The practice of people using the toilet they own

Table 4.3 Practices of participants that use their toilet facility

Do you have toilet facility in your household	Do you use the said toilet facility		
	No	Yes	Total
No	33	37	70
	47.14	52.86	100.00
Yes	27	203	230
	11.74	88.26	100.00
Total	60	240	300
	20.00	80.00	100.00

The presentation from Table 4.3 shows that 88.3% of those that own a toilet use it, while 11.7% own a toilet but do not use it. However 52.8% of those that do not own a toilet tend to use a toilet facility. Out of all the participants only 47% do not own a toilet and don't use a toilet.

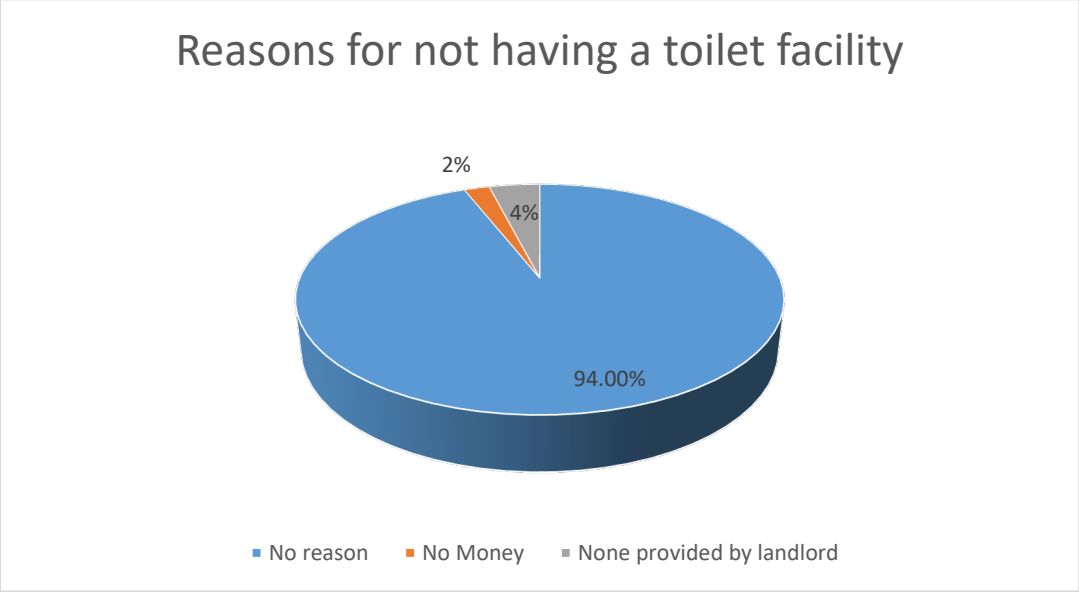

Figure 4.3: Reasons for the absence of toilet facility in the house

Figure 4.3 shows the different reasons why some of the household do not have a toilet, majority (94%) do not know why they do not have a toilet, while the other reasons are no money and none provided by landlord are 2% and 4% respectively. This is interesting considering the fact that only 11% of the participant do not have toilet.

4.4 Demographic characteristics of open defecation in Teshie Ledzokuku Municipality

Table 4.4 Demographic characteristics of Open defecation

Demographic characteristics		Open defecation				P-value
		No (n)	No (%)	Yes (n)	Yes (%)	
Sex	Female	116	80.56	28	19.44	**0.369**
	Male	119	76.28	37	23.72	
Marital status	Single	158	80.2	39	19.8	**0.006**
	Married	57	85.07	10	14.93	
	Separated	15	55.56	12	44.44	
	Divorced	4	50	4	50	
	Widowed	1	100	0	0	
Educational background	No formal education	3	42.86	4	57.14	**0.12**
	Basic level	76	76.77	23	23.23	
	Senior/Voc/technical	91	80.53	22	19.47	
	Tertiary	65	80.25	16	19.75	
Age group	18-30 Years	158	83.6	31	16.4	**0.00**
	31-40 Years	31	59.62	21	40.38	
	41-50 Years	29	87.88	4	12.12	
	Above 50	17	65.38	9	34.62	
Family monthly Income	<500	80	68.97	36	31.03	**0.002**
	500-1000	47	74.6	16	25.4	
	Above 1000	38	90.48	4	9.52	
	Nothing	70	88.61	9	11.39	
Toilet facility available	No	37	52.86	33	47.14	**0.00**
	Yes	198	86.09	32	13.91	
Number of persons in a household	1-5 Members	96	77.42	28	22.58	**0.033**
	6-10 Members	99	82.5	21	17.5	
	11-20 Members	30	65.22	16	34.78	
	Above 20 Members	10	100	0	0	

Table 4.4 shows the demographic characteristics factors and its association with open defecation. Chi-square test was used to determine which factor has a significant association and those that don't. A significant association occurs when a factors has an alpha (α) value less than 0.05. A confidence interval of 95% was used for all the factors considered. These are some of the factors that had a significant association with Alpha value less than 0.05; Marital status (0.006), Age group (0.00), Family monthly income (0.002), Toilet facility available (0.00) and number of persons in a household (0.033).

Also Sex (0.369) and Educational background (0.12) has an Alpha value greater than 0.05 and therefore not statistically significant.

4.4.1 Logistics regression model for demographic factors on Open defecation practices

Table 4.5 Logistics regression for each demographic factors on open defecation practices.

Variables		OR	P-value	95% CI
Sex	Female		R	
	Male	1.29	0.37	0.74-2.24
Marital status	Single		R	
	Married	0.71	0.377	0.33-1.52
	Separated	3.24	0.006	1.40-7.48
	Divorced/Widowed	4.05	0.055	0.97-16.92
Educational background	No formal education		R	
	Basic level	0.23	0.064	0.47-1.09
	Senior/Voc/technical	0.18	0.033	0.38-0.87
	Tertiary	0.18	0.038	0.04-0.91
Age group	18-30 Years		R	
	31-40 Years	3.45	0	1.76-6.78
	41-50 Years	0.7	0.535	0.23-2.14
	Above 50	2.7	0.03	1.10-6.60
Family monthly Income	<500		R	
	500-1000	0.76	0.43	0.38-1.51
	Above 1000	0.23	0.01	0.08-0.70
	Nothing	0.28	0.002	0.13-0.63
Toilet facility available	No		R	
	Yes	0.18	0.00	0.1-0.33
Number of persons in a household	1-5 Members		R	
	6-10 Members	0.73	0.323	0.39-1.36
	Above 10 Members	1.37	0.388	0.67-2.81
Member of household practicing Open defecation	No		R	
	Yes	11.17	0.000	5.97-20.9
Is child feces thrown in the open	No		R	
	Yes	4.18	0.000	1.98-8.86
Do you have a child below 3 years	No		R	
	Yes	2.11	0.013	1.17-3.82

Table 4.5 above shows the individual demographic factors on open defecation practices and their level of Statistical significant (p-value). It is important to note that even though the level of significant for some factors is not statistically significant but it is very important for our study. The R on the table shows the category of reference group in each variable.

- **Sex & Marital status**

It is clear that Males are 1.29 times more likely to practices open defecation as compare to the Female. Married couples are 0.71 times less likely to practice open defecation as compare to singles while Separated and Divorced/Widowed are 3.24 and 4.05 times more likely to practices open defecation compare with singles respectively.

- **Education background**

All those with education are less likely to practices open defecation compare with those with no formal education. Also the rate decreases as the educational level increase.

- **Family monthly income**

Those earning above Ghc500 are all less likely to practices open defecation compare to those earning less than Ghc500. Also the rate drops as the income increases.

- **Toilet facility available & Number of person in a household**

Those with toilet facility are 0.18 less likely to practices open defecation as compare. Also household with 6-10 members are 0.73 less likely to practices open defecation and those above 10 members are 1.37 times more likely to practices open defecation as compared to family with 1-5member.

- **Members of household practicing Open defecation**

Those that have member in their household that has practiced open defecation are 11.17 times more likely to practice open defecation themselves as compare to those with no member practicing open defecation.

- **Inappropriate disposal of child feces**

Persons who discriminately dispose their child feces are 4.18 times more likely to practices open defecation as compare to those who dispose child feces appropriately.

4.4.2 Multivariate logistics model of factors associated with open defecation

From Table 4.6 below, the multivarite logistic regression analysis output using the variables that were statistically significant like Educational backgroup, Age group, Family monthly income, availablilty of toilet facility and number of household members. The model is a good model because the p-value is 0.000 which is less than 0.05, even though only 19.8% of the variability in outcome can be predicted by the explanatory variable used.

The table shows that as educational level increases the likelyhood of open defecation reduces. Those with basic education, senior/voc/technical, and tertiary are less likely to open defecate by 0.946, 0.533, 0.505 respectively as compared to those without education while holding all other variable constant.

Also those between 31-40 years and Above 50years are 4.076 and 2.164 times respectively more likely to practice open defecation while those between 41-50years are 0.795 times less likely to practices open defecation as compared with those between 18-30years, while holding other variable constant.

The table further shows that only the variable ‘do you have a toilet facility’ is statistically significant because it has a p-value of less than 0.05. even though all the variables used for the multivariate were statistically significant in predicating open defecation with unadjusted odd ratios.

Table 4.6 Multivariate logistics model of factors associated with open defecation

Logistic regression — Number of obs = 300
LR chi2(12) = 62.09
Prob > chi2 = 0.0000
Log likelihood = -125.75082 — Pseudo R2 = 0.1980

Doyoupracticeopendefecation	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Educationalbackground						
Basic level	.9462337	1.05251	-0.05	0.960	.1069533	8.371491
Senior/Voc/Technical Level	.5326783	.5795389	-0.58	0.563	.0631512	4.493121
Tertiary	.5045423	.554643	-0.62	0.534	.0585022	4.351338
Newage						
31-40 Year	4.07569	1.743793	3.28	0.001	1.762028	9.427347
41-50 Years	.7945986	.4822156	-0.38	0.705	.2418699	2.610441
Above 50 Members	2.164341	1.168826	1.43	0.153	.7510083	6.237442
Familymonthyincome						
500-1000	.9291045	.3747129	-0.18	0.855	.4214736	2.048136
Above 1000	.321797	.193821	-1.88	0.060	.0988317	1.047774
Nothing	.3408137	.1570193	-2.34	0.019	.1381505	.8407785
Doyouhavetoiletfacilityiny						
Yes	.1716253	.062585	-4.83	0.000	.0839811	.3507367
numbhousenew						
6-10 members	.5094514	.1896379	-1.81	0.070	.2456133	1.056705
above 10 members	.6678084	.3059331	-0.88	0.378	.2720844	1.63908
_cons	2.000861	2.191339	0.63	0.527	.2338745	17.11793

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4.5 Perceptions towards open defecation and hand washing in Teshie Ledzokuku Municipality

Table 4.7 Perceptions towards open defecation and hand washing in Teshie Ledzokuku Municipality.

People perception on Open defecation		Open defecation				P-value
		No (n)	No (%)	Yes (n)	Yes (%)	
Preference of home toilet to Open defecation	Privacy	71	87.65	10	12.35	**0.00**
	Convenience	49	80.33	12	19.67	
	Hygiene	2	100	0	0	
	Safety	102	77.86	29	22.14	
	Status and Prestige	11	44	14	56	
How do you feel about open defecation	Good	212	87.24	31	12.76	**0.00**
	Bad	17	37.78	28	62.22	
	Nothing	6	50	6	50	
Use of soap and water for hand washing	No	9	45	11	55	**0.00**
	Yes	226	80.71	54	19.29	

From table 4.7, Safety was the most (102) reason for preference of home toilet to open defecation table, next was privacy (71). Also those (29) who practices open defecation believes that they are safe when they practice open defecation instead of using a home toilet facility that sometimes is unclean.

Majority (87.24%) of participants in ‘good’ category feel good for not practicing open defecation, while 62.2% in the category of ‘bad’ feel bad about themselves while practicing open defecation.

80.71% of the participants that do not practices open defecation wash their hands with soap and water, while 19.29% of those that practices open defecation also use soap and water for hand washing. However 55% of those that practices open defecation do not use soap and water for hand washing.

All three variable are closely associated with open defecation as their p-value are all zero, this shows that all variables are highly statistically significant.

4.6 To evaluate the link between proper handling and disposal of child stool and open defecation.

Table 4.8 link between having a child under 3year, how their stools been dispose and adult open defecation.

link between children stools disposal and open defecation		Open defecation				P-value
		No (n)	No (%)	Yes (n)	Yes (%)	
Do you have any children below 3 years	No	184	81.78	41	18.22	
	Yes	51	68	24	32	0.012
Is the child faeces thrown in the open area?	No	218	81.65	49	18.35	
	Yes	17	51.52	16	48.48	0.00

From Table 4.8, 81.78% of participants who do not have any children below 3year do not practice open defecation and for those with children only 32% practice open defecation.

Also 81.65% of those who do not throw children stool in the open do not practices open defecation, while 48.48% of those throwing children stool in the open practice open defecation.

Both variable are good predictors of open defecation because their p-values are 0.012 and 0.00 respectively.

4.7 Reasons for open defecation practices.

Table 4.9 Reasons for practices of open defecation

Variable	Category	Frequency (%)
Reasons for Open defecation	Normal	234 (78%)
	Free	9 (3%)
	No smell	7 (2.33%)
	No queue	5 (1.67%)
	No toilet	38 (12.67%)
	Water shortage	7 (2.33%)
Place of Open defecation	Bush	106 (35.33%)
	Beach	122 (40.67%)
	Refuse dump sites	18 (6%)
	Gutters	24 (8%)
	Uncompleted building	9 (3%)
	House backyard	21 (7%)

From table 4.9 majority (78%) of respondents said practicing open defecation is normal, and 12.67% said they practice open defecation because there is no toilet facility. About 35.33% open defecate in the bush and 40.67% at the beach and seaside.

CHAPTER FIVE

DISCUSSION

5.1 Demographic characteristics and Educational background of respondents

From the findings only 2.3% of participants has no formal education, this indicates that majority of the participants has some form of education. Although Educational background having P-value of 0.12 is not statistically significant in our findings, it has a relationship with open defecation because the likeliness of open defecation practice decreases as educational level increases from Basic education to Tertiary with odds ratios of 0.23 and 0.18 respectively.

Also with high level of education, where 97.7% has one form of education from Basic to Tertiary but only 14% is engaged in formal employment, whiles 42% are in the informal sector and 44% unemployed. Out of the high number of educated participants only 14% earns above One Thousand Ghana cedis even though 27% have completed Tertiary education and 59.6% earn below One Thousand Ghana cedis (Ghc1000) per month. This indicates that there is high school enrollment but small good paying formal job opportunities therefore the reason why 42% are either trading or artisan.

5.2 Determinant factors of open defecation in Teshie Ledzokuku Municipality

The study shows 21.7% of participants practice open defecation which consist of individuals with (13.9%) and without (47.1%) toilet facility at home. However 23.3% of participants has no toilet at home and 94% of these individuals do not have any reason why they do not have any toilet at home only few says because landlord did not provide and monetary issues. Also of the number that practices open defecation 75% see it as normal. It is worrying as the mindset towards open defecation is wrong.

Sequel to Tarraf, 2016 findings that lack of toilet facility is a determining factor of open defecation and However from the study 11.7% of participants has toilet at home but do not use it

for whole range of reason and 5% has toilet that is not functioning. The provision and use of toilet facility is an important component of the strategy for breaking the cycle of transmission of excreta-related disease (CSWA, 2004).

The study further shows that those that have members of their family practicing open defecation are 11.2 times more likely to practice open defecation compare to those without any family member practicing open defecation. This is the highest odds ratio in the study and it is exacerbated by the general feelings toward open defecation as normal way of life. This is a significant factor in our findings

From the table 4.9 above about 234 participants making up 78% saw open defecation as normal, in fact only 7 participants practices open defecation because it is free. This shows that money isn't the main cause for open defecation. Furthermore out of the 38 participants that has no toilet only 18 practices open defecation meaning that it can be a choice one makes and not really the current situation. But the major problem is that majority including those who do not practices open defecation see it as normal, making cultural issues. This is very similar to the findings of (Tarra 2016) in india where people see open defecation as normal.

Table 4.10: Those having toilet with and without problems

Are there any problems in the use of the said toilet facility	Do you have toilet facility in your household		
	No	Yes	Total
No	19	161	180
Yes	16	15	31
Don't know	35	54	89
Total	70	230	300

Table 4.12: number of person using a toilet and those who always use their toile

How many people use the said toilet facility	Do you 0 use the toilet facility		Total
	Always	Sometimes	
1-5	83	60	143
6-10	56	51	107
11-20	23	27	50
Total	162	138	300

Table 4.13: how people feel about their toilet facility.

Do you have toilet facility in your household	How do you feel about open defecation			Total
	Bad	Good	Nothing	
No	36	25	9	70
Yes	207	20	3	230
Total	243	45	12	300

From table 4.13 it can be seen that 230 of the participants has toilet facility in their homes, however in table 4.12 only 162 persons always use their toilet facility, this is closely related to the 161 persons that has toilet without problems in table 4.10. Also it is clear from table 4.12 that as number of those using the toilet increase the number of those always using their toilet reduces.

It can be inferred that as more people use the said toilet facility it becomes very difficult to keep clean thereby discouraging people from using it. This also shows in table 4.13 where 20 of the

persons with toilet feel good about open defecation. This is similar to the findings of (Osumanu, Kosoe and Ategeeng, 2019) that owing a toilet isn't a the main predicting factor for open defecation but having toilet used by fewer person.

5.3 Perceptions of open defecation and hand washing in Teshie Ledzokuku Municipality

Another good predictor of open defecation from our study is hand washing. From table 4.7 80.7% of our participants practices hand washing and do not practice open defecation. It can be implied that good hygiene has more to do with our decision to practice open defecation. Additionally good hand washing practice can inhibit sickness and prevent transmission of communicable disease.

5.4 Open defecation practice in Teshie Ledzokuku Municipality

From table 4.5 males are 1.29 times more likely to practices open defecation compare to female, also only 2.3% of our participants has no formal education this is important as there is a decreasing likeliness to practice open defecation as education level improves from Basic level to Tertiary.

However the age group that is most likely to practice open defecation is 31-40year. This is further shown from table 4.9 where the major group with high family income is those between 18-30years. Meaning that those between 31- 40year are most likely to practices open defecation. Also those with household numbers above 10 are 1.37 times more likely to practices open defecation compare to those that has 1-5 members.

Finally those that live in houses where a member of the house practice open defecation are 11.17 times more likely to practice open defecation compare to those where no household member practice open defecation. And participants that throw child stool in the open are 4.18 times more like to practice open defecation compare to those who don't.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study found that open defecation is practices by both those with toilet facilities (14%) and those without toilet (47%). Major reasons for open defecation includes; lack of toilet facilities, poverty, the use of one toilet by many and the preference to openly defecate.

Furthermore Hand washing has a significant influence on open defecation, our study finds that 80.7% of participants who practice hand washing after using the toilet do not practice open defecation.

Participants with higher education, better income and small household are less likely to practices open defecation. Also sex had no association with the practices of open defecation.

6.2 Recommendations

1. The schools within the Ledzokoko municipality should intensify its effort on WASH ongoing hand washing initiative as hand washing with soap after using the toilet will greatly reduce the likelihood of a child practicing open defecation.

2. The health officer within the Assembly should engage religious bodies' especially Christian and Muslim leaders to educate their members on the health problems connected with open defecation.

3. The Assembly should encourage parents to take advantage of the free education by the government and enroll all their children of school going age because it will help to educate their children on open defecation.

4. The Assembly should engage Ghana Education Service and World Bank for provision of more toilet facility for schools as they have done through the WASH project.

5. The Assembly should engage in Massive media campaigns like erecting billboards and appearing on both radio and TV to educate the masses on the consequence of open defecation.

6. I recommend further research in Open defecation within Ldzokoko Municipality especially on the awareness of adverse health consequences of open defecation.

7. The Assembly should work together with the community leader and come up with an amount to fine anyone caught in the practices of open defecation.

APPENDICES

Appendix 1: Questionnaire

Questionnaire on factors contributing to prevalence of open defecation in Teshie Ledzokuku Municipality, Greater Accra Ghana.

Respondent's ID #:……. Date: ……/……./…….

Name of Interviewer…….

Dear Sir/Madam

My name is Ike Onyema Obi. I am a student of Ensign College of Public Health, Kpong. I am the Principal investigator for the research work on Factors contributing to prevalence of open defecation in Teshie Ledzokuku Municipality, Greater Accra Ghana. This research work is mainly for academic work that can also be used for database in policy formulation.

Kindly spare me some of your time in answering this questionnaire. You are hereby assured of anonymity and confidentiality regarding any information provided. Should you feel reluctant to participate at any point you have a right to opt out without any offence or hindrance. Please feel free to contact me on mob: 0240828440. Email: ikeonyema@gmail.com, should you have any questions. Thank You

Please tick { } the appropriate response from the opinions provided and in some cases, you may be required to provide answer where no options are given

Section A: Demographic characteristics of respondents

1. Sex a. Male ☐ b Female ☐
2. Age…….
3. Marital status. a. Married ☐ b. Single ☐ c. Divorced ☐ d. Separated ☐
4. Educational Background. a. Basic level. ☐ b. Sen. High/Voc/Tec level ☐ c. Tertiary ☐ None of the above ☐
5. Occupation. a. Farming ☐ b. Fishing ☐ c. Trading ☐ d. Teaching ☐
   e. Other specify…….
6. Facility of interview? a. Household ☐ b. Non-household ☐ c. Institution, Specify……
7. Family monthly income a. Less than 500 ghc ☐ b. 500-1000 ghc ☐ c. Above 1000ghc ☐
8. Household (Number of people)…….

SECTION B: OPEN DEFECATION AND LATRINE USE AMONG HOUSEHOLD

10. Do you have toilet facility in your household? a. Yes ☐ b. No ☐
11. If yes how many? a. 1 ☐ b. 2 ☐ c. 3 ☐ d. Other, specify……
12. If no, why…….
13. Do you practice open defecation? a. Yes ☐ b. No ☐

14. If yes to Question 10 above, which of the following toilet facility do you use in your household?
    a. Pit Latrine ☐ b. KVIP ☐ c. Water Closet ☐ d. Others, specify……
15. Do you use the said toilet facility? a. Yes ☐ b. No ☐
16. Do you always use the toilet facility? a. Yes, always ☐ b. Sometimes ☐
17. Why do you prefer the use of home toilet to public type/open defecation? a. Privacy ☐
    b. Convenience ☐ c. Safety ☐ d. Status/Prestige ☐ e. Others, specify……
18. When do you usually use the toilet facility? a. Morning ☐ b. Afternoon ☐ c. Evening ☐
19. How many people use the said toilet facility? a.1-5 ☐ b. 6-10 ☐ c. 11-20 ☐
20. How do you feel about the number of the facility users? a. Good. ☐ b. Bad ☐ c. Nothing ☐
21. Are there any problems in the use of the said toilet facility? a. Yes ☐ b. No ☐ c. Don't Know ☐
22. If yes what kind of problems…….

SECTION D: PEOPLES'ATTITUDE REGARDING OPEN DEFECATION AND LATRINE USE

23. Has any member of your household ever defecated in the open? a. Yes ☐ b. No ☐
24. If yes to the above, mention any reason(s) for defecating in the open…….
25. Where do people usually open defecate in the community? ……
26. Do you have any children below 3 years old? a. Yes ☐ b. No ☐
27. How is child faeces dispose of? Thrown in open area? a. Yes ☐ b. No ☐
28. If you could choose, which toilet facility would you select? a. Pit latrine ☐ b. KVIP ☐
    c. Water closet ☐ d. Public Toilet ☐
29. Why do you prefer the chosen facility? a. Convenient ☐ b. Environmentally friendly ☐ c. Not expensive ☐ d. Easy to use ☐ e. Culturally and religiously okay ☐

SECTION C: DESCRIBE PEOPLES' PERCEPTIONS AND BELIEFS ABOUT OPEN DEFECATION

30. How do you feel about open defecation? ……..
31. How do you feel about public toilet? ……
32. Do you or will you ever prefer open defecation to latrine use? a. Yes ☐ b. No ☐
33. Give the reason to your response in question 31 above……

SECTION E: HAND WASHING WITH SOAP

34. Do you use soap when you are washing your hands? a. Yes ☐ b. No ☐
35. What critical times do you wash your hands? a. After visiting the toilet ☐ b. Before eating ☐
    c. After eating ☐ d. After returning from outside ☐ e. Others, specify ……
36. Why do you wash your hands in the critical times you have mentioned? a. Personal hygiene ☐
    b. Prevent Sickness ☐ c. Remove odour ☐ d. Don't know ☐

Appendix 2: Consent Form

Introduction

Hello my name is Ike Onyema Obi and I am working on my thesis project in conjunction with Ensign College of Public Health. I am conducting interviews in Teshie Ledzokuku Krowo municipality, Greater Accra, Ghana; on analysing the factors contributing to the prevalence of open defecation. We would very much appreciate your participation.

Open defecation is the disposal of human faeces in fields, forests, bushes, open water bodies, beaches or other open spaces. The percentage of people without access to basic sanitation facilities in Africa was 44 percent in 2000 and 37 percent in 2010, and In sub-Saharan Africa, in particular, 70 percent, or two out of three people, do not have access to a toilet, a staggering statistics coupled with the fact that slum growth and urbanization is raising present a difficult situation. A common solution is to share toilet facilities through partnerships of landlord and tenants. However shared sanitation in the form of public or community latrines is a pragmatic way of increasing coverage.

Confidentiality

I would not be sharing information about you with anyone outside my research team. Information collection from this research will be kept private. All participants will be given a unique number instead of your name. Only the Research will know what your unique number is and we will lock that information up with a lock and key. This information is only for the research team.

Risk

I am asking you to share with me important personal information about yourselves and it is normal to feel uncomfortable talking about this topic. You do not have to answer any question if you don't wish to do so, and that is also fine. Also you do not have to give us any reason why you choose not to answer any question.

Benefits

This interview has no direct benefit to you, but your involvement is likely to help us find out more about how to reduce and eliminate open defecation. We would not be able to provide you with any incentive.

Duration

I would like to ask questions about your attitudes, beliefs and experiences relating to Open defecation. This interview will last 30-50 minuets.

Please note that you can choose not to answer any question or all of the question and your participation is voluntary.

At this point would you want to me a question?

Would you want to participate now Yes……. No……

Respondent Agree to be interview……..

Respondent does not Agree to be interview……..

Name of Interviewer……. Date:…….

Respondent's Signature…….. Thumb Print……

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