THE INCIDENCE OF OPEN DEFECATION IN BENIN CITY, EDO STATE, NIGERIA.

BY

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CERTIFICATION

This is to certify that this research work was carried out by Oghenevwoke Onobrakpeya in partial fulfilment of the requirements for the award of Bachelor of Science (B.Sc.) Degree in Geography and Regional Planning of the University of Benin, Benin City, Nigeria.

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DEDICATION

This work is dedicated to the Lord God Almighty for his grace, favour, divine protection and guidance prior to and throughout my academic years in University of Benin. To my parents as well, Mr and Mrs John and Jokpa Onobrakpeya. They have loved and provided for me in every area of my life. Without them, I would not be who I am today.

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ABSTRACT

This study investigated the incidence of open defecation in Benin City using Egor Local Government Area as a case study. The survey research design was employed for the study. A total of 400 questionnaires were administered systematically to generate data from household heads, heads of motor parks, operator of public toilets and heads of cooperate bodies, while personal observation was done to see the availability of toilet facilities and clean water to residents in the area. Results showed that lack of toilet facilities, water and high cost of sinking borehole accounts majorly for the menace of open defecation in Benin City. Also, the study indicated a strong correlation between the outbreak of water borne diseases and open defecation in the place with a significant level of 0.05. It was also revealed that work places, markets and motor parks do not have adequate toilet facilities and this has increased open defecation in the study area. This study recommends that government should collaborate with NGOs and individuals to sustainably address the menace of open defecation through the provision of toilet facilities, public toilets and clean water in the area.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Elimination of human waste is one of the basic needs of man (Thiga and Cholo, 2017). Defecation is defined as a bowel movement in which faeces are evacuated through the rectum and anus (Thiga and Cholo 2017). Open defecation is passage of stool in an open environment in and around one's local community and it is as a result of no access to toilets, latrines or any kind of improved sanitation (Essuman and Maria 2015). This practice is common in high poverty areas where sanitation facilities are ignored (Thiga and Cholo, 2017). Also, Abubakar (2018), sees open defecation as a kind of sanitation which involves the disposal of human waste in garbage bins, water bodies, public areas, forests, farmlands or other open and green spaces. Saleem, Burdett and Heaslip (2019), has also defined open defecation as the practice which involves defecating in open fields, waterways and open trenches without any proper disposal of human excreta. The practice of open defecation according to Kar and Pasteur (2005) is common in Africa and results in environmental degradation which directly affects the health and quality of life of millions of people, especially the most vulnerable people in the region.

Open defecation is practiced in many countries, and sometimes as a culture or tradition (Coffey, et. al., 2014). According to (WHO/UNICEF, 2017),

open defecation is prevalent mostly in sub-Saharan Africa and Asia, It has been reported that 90% of people who practise open defecation reside in rural areas of three regions, i.e., sub-Saharan Africa, Central Asia and Southern Asia (Saleem, Burdett and Heaslip, 2019). At least 25.1% or 46 million people in Nigeria practicing open defecation in 2015, placed Nigeria in the third position in the world in open defecation prevalence after India and China (Abubakar, 2018). Coffey et al. (2014) report that most people who live in India defecate in the open, and most people worldwide who defecate in the open live in India. It has also been reported that 67% of rural households and 13% of urban households in India defecate in the open (Coffey et al, 2014), while India accounts for 60% of the world's open defecation (WHO and UNICEF, 2014). According to (UNICEF, 2014), sanitation coverage in terms of access to latrine, is available from more than one source with different figures. Notwithstanding these deviations it can be concluded that access to latrine in Nigeria is far from satisfactory. According to the 2003 National Demographic and Health Survey (NDHS), around 18 % of households in Nigeria used improved sanitation facility like flush toilet or water closet (WC), over 56 percent used traditional pit latrines and 26 % had no access to sanitation facility forcing them to go for open defecation. In rural areas close to one-third of the households were practicing open defecation. The same source for 2013 indicates an increase in the percentage of households (29%) reporting open defecation although there was a decrease in the percentage of households using

traditional pit latrine (37%) and an increase in the use of improved sanitation facility (30%).

Open defecation is widely practiced in all the regions of Nigeria (North, South, East and West). Unlike a previous report that Nigeria was third after India and China in 2015 (Abubakar, 2018), Nigeria is reported to rank second among countries practicing open defecation globally, leading to social, economic and health implications (News Bank Inc., 2019). Most communities in the Niger Delta reside in the sea coasts, estuaries and mangrove swamps, and generally, there is absence of sanitation facilities (Cookey et al*,* 2008). This implies that coastal communities defecate into the surface water as a culture. Some communities that live far from the coast defecate on bare ground in bushes, dark corners and even rivers that pass through their communities. A good percentage of people in the Niger Delta do not have access to sanitation facilities such as faecal disposal facilities, water closet connected to septic system, ventilation improved toilet, simple pit toilet and even waste bin for children (Okon, 2017).

The implication of open defecation as opined by Randymay, Kimboline, Okon and Matthew (2019) is water and food pollution by faecal material through run-off input into drinking water sources, and pests and rodents which transfer disease-causing organisms into food. These disease-causing organisms are associated with diarrhoea, typhoid fever, cholera, giardiasis, infantile paralysis (poliomyelitis), etc. (Eja, 2003). Thus, open defecation poses a significant threat

to the environment and human health, safety and dignity, especially for women, girls and children (Desai et al, 2015; Abubakar, 2018). However, despite the fact that open defecation has a great implication on health and the environment at large. Coffey et al. (2014), pointed out that a good number of the rural populations still engage in open defecation with 67% of rural households and 13% of urban households defecating in the open. According to Abubakar, (2018), in Nigeria, a national roadmap to reduce or eliminate open defecation in 2025 at national level as well as Water Supply and Sanitation Agency (RUWASA) was set up to help recognize the adverse effects of poor sanitation and open defecation, and design a programmed to become open defecation free. Up till now, these intervention initiatives have not yielded full results.

There are several factors associated with open defecation in the communities, especially rural communities of those countries where open defecation is practiced. Such factors may be availability of sanitation facilities, demographic (Abubakar, 2018), remoteness (O' Reilly et al, 2017), socio-cultural and behavioral attitude (Coffey et. al, 2014).

1.2 Statement of the Research Problem

One fundamental environmental problem facing Egor Local Government area is open defecation. The lack of public toilet facilities, portable water and high cost of toilet facilities compels residents to resort to open defecation. This menace has led to several disease conditions amongst children. Open defecation is usually

regarded as an individual problem, following decision of whether to build and/or use a toilet or not. Users may still choose to openly defecate, and that decision is likely influenced by a number of technological and behavioural factors (Coffey, et al, 2014; Hulland et al, 2015; Routray et al, 2015).

Nigeria is reportedly ranked second among countries practicing open defecation globally and also rank first in Africa, leading to social, economic and health implications (News Bank Inc., 2019). Nigeria is reported to be the alternate headquarters for open defecation with over 47 million persons still engaging in the act across the country (News Bank Inc., 2019). News Bank Inc. (2018) reports that Nigeria in the past 15 years has remained among the top five countries practicing open defecation. The percentage of population practicing open defecation across the six geo-political zones in Nigeria shows north-central (53.9%), south-east (22.4%), north-east (21.8%), south-south (17.9%), south-west (28.0%) and north-west (10.3%) (News Bank Inc., 2019), indicating that open defecation is practiced in all regions of Nigeria. According to Water, Sanitation and Hygiene (WASH) Normal Outcome Routine Mapping (NORM), as reported by News Bank Inc. (2019), one in four Nigerians defecate in the open, while one in two persons in the north-central defecates in the open; also, out of the 47 million practicing open defecation in Nigeria, 16 million are from the north-central.

The pressure and cost involved in accessing limited toilet facilities has forced many residents, especially the poor to end up defecating openly and indiscriminately. The cost involved in accessing the facility has also forced many vulnerable women and children to end up defecating around their houses and sometime in the bush. Most often, children become victims of snake bite and scorpion sting while defecating in the bush (TTFPP, 2013; Essuman and Maria 2015). Although similar studies have been carried out on by different scholars on the incidence of open defecation for example, Randymay, et.al. (2019) worked on open defecation profile of rural communities in Cross River and Akwa-Ibom states, Essuman, and Maria, (2015), also worked on addressing open defecation sanitation problem: the case of dry toilet implementation in the Wa Municipality, Ghana, Saleem, et al, (2019) worked on the health and social impacts of open defecation on women, Abubakar, (2018) also explored the determinants of open defecation in Nigeria using demographic and health survey data, Coffey, et al. (2014) also revealed preference for open defecation evidence from a new survey in rural North India and Thiga and Cholo (2017) conducted research on an assessment of open defecation among residents of Thika East Sub-County, Kiambu County.

From the foregoing, there is the need to carry out a study that will examine the impact of open defecation on residents' wellbeing as well as the factors

influencing the practice of open defecation in Egor Local Government Area, Benin City, Edo State.

1.3 Research Questions

1. What are the factors responsible for the menace of open defecation among residents in the study area?
2. What are the effects of open defecation on the people in the study area?
3. What are the perceptions of the residents on open defecation in the study area?
4. What are the possible solutions to open defecation in the study area?

1.4 Aim and Objectives

The aim of this research work is to examine the incidence of open defecation in Benin City Nigeria. The specific objectives are to:

1 determine the factors responsible for the menace of open defecation in the study area,

2 evaluate the effects of open defecation on the people in the study area,

3 examine the perception of the residents on open defecation in the study area, and

4 proffer sustainable solutions to the menace of open defecation in the study area.

1.5 Hypothesis

There is no significant relationship between open defecation and outbreak of water borne diseases in the study area.

1.6 Significance of the Study

The purpose of this study is to develop an understanding of public awareness and attitude toward preserving and protecting environmental hygiene and sanitization in Benin City. This study can be used to test or examine the hygienic conditions and sanitization of other places in Nigeria as findings in this study will help identify hotspots for open defecation in urban areas and also help explain the factors that lead to the practice of open defecation. Furthermore, this study will help describe how open defecation affects people living around hotspot of open defecation as well as their views on hoe to eradicate open defecation.

The crux of this study is to address the environmental sanitation problem leading to open defecation through a holistic approach of integrating an alternative sanitation technology that is compatible with local setting for community development and proper sanitation in Benin City.

1.7 Scope of the Study

This study focused on examining the impact of open defecation on residents' health and comfort as well as the associated factors influencing the practice of open defecation in Benin City using Egor Local Government Area as a case study.

1.8 Study Area

1.8.1 Location and Size

The study was carried out in Benin City which is the capital of Edo State (Figure 1.1). Benin City is located within Latitudes 6° 16’ 10” N and 6° 24’ 50” N and Longitudes 5° 34’ 41” E and 5° 40’ 40” E. It is situated along a branch of the Benin River. It is spatially bounded by Owan West to the North, Esan West to the East and Delta State to the South. Benin City lies along the main highway from Lagos to the Niger Bridge at Asaba. (Figure. 1.2) and the metropolis occupies a total land area of about 1,112 km^2 and has an average elevation of about 80m above sea level.

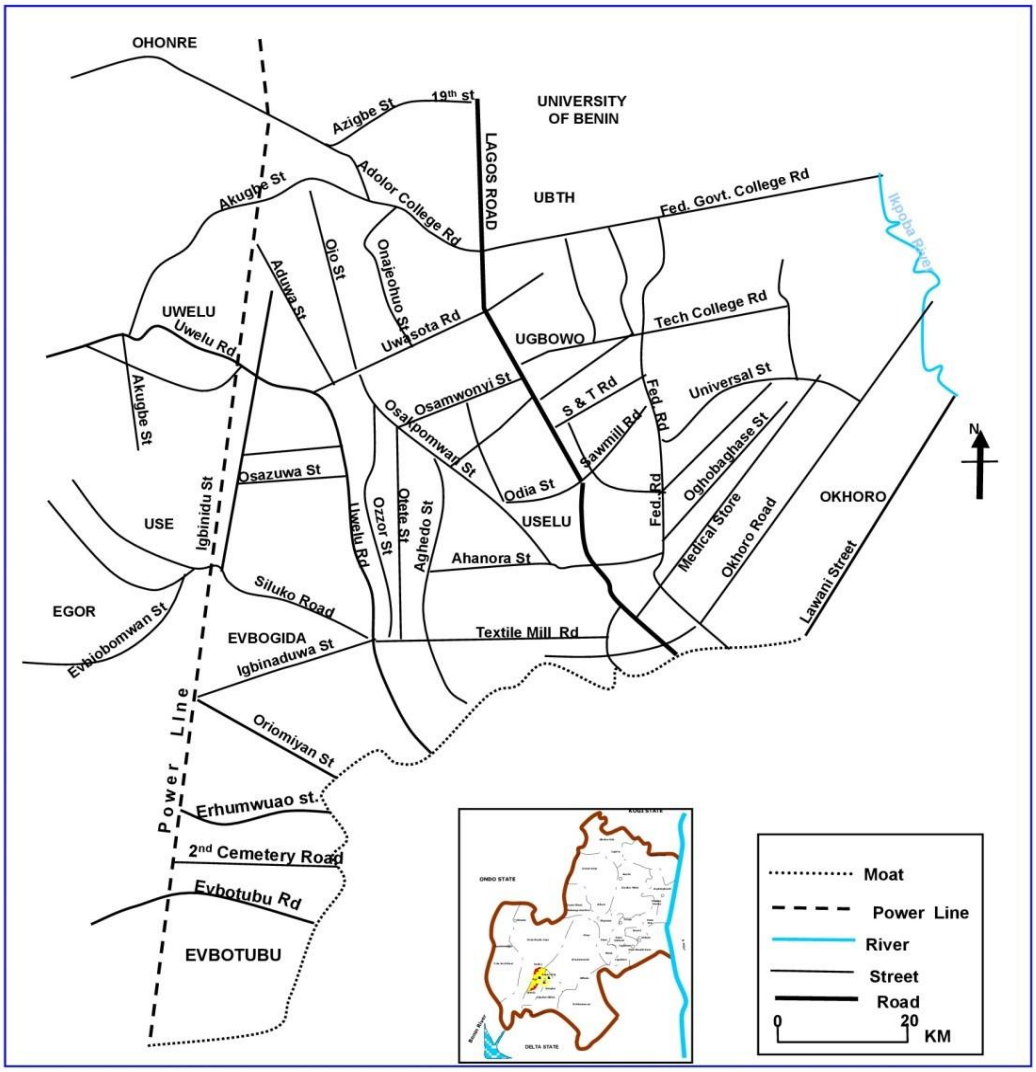

Fig 1.1: Egor Local Government Area

Source: Ministry of Lands and Survey, Benin City (2010)

1.8.2 Population of Benin City

The population of Benin City has grown tremendously over the last few decades. The rapid growth of the city's population according to Okafor (2002) could be traced to the historical importance of the city coupled with the easy access to other parts of the country. However, when compared to the rate of population growth of other large cities in Nigeria, the rate of population growth in Benin City has not been particularly impressive (Okafor, 2002). The population of Benin City in 1952 was given to be 53,753 (Okafor, 2002) from which it grew to 100,649 in 1963 (Omuta, 1984). By 1972 the population of Benin City grew to 249,437 (Omuta, 1984) and was estimated to be 314,219 in 1976 (Sada, 1976). The population of Benin City as captured in the 1991 population census was given 801,622 (NPC, 1991). By the year 2000 the population of Benin City was estimated to be 850,000 (Okafor, 2002). Benin City has a population of 1,147,188 according to the national population census of 2006 (NPC, 2006). The population was projected to rise to about 1,385,845 by 2015 (Edo State Statistical Year Book, 2013) and it is projected to rise to 1,433,620 by the year 2016.

Benin City is made up of three Local Government areas; Oredo, Egor, and Ikpoba-Okha and the urbanizing areas of Ovia North East and Uhunmwonde (Asikhia, Eghagha, and Eyakwanor. 2016). Egor been the study area is one of the three densely populated local government areas within the Benin metropolis. This area is densely populated than every other area in Benin with a population of about 339,889 with total landmass of 66,000 km^2 (NPC, 2006).

1.8.3 Socio-economic Activities

Although Benin City has not been particularly known for high level industrialization in recent times, it was a highly industrialized city in the ancient times with cottage industries. In the ancient times the city was popular for its workers guild who made specialized products such as bronze works most of which were monopolized by the king, however those glorious day are long gone. A time many primary industries which processed the vast agriculture and forest resources that were abundant in the city and the region around it like rubber and oil palm were located within the city to take advantage of these resources. Most of these industries however are no longer functional and the ones still functioning is either not producing to full capacity again or have been taken over by foreigners. Thus, the level and the pace of industrialization in Benin City are low. According to Okafor (2002), the low rate of industrialization could be blamed on inertia, the slow pace of moving from mainly primary processing industries to major manufacturing establishments.

Recently we have seen the emergence of some industries in Benin metropolis, industries like the Nigerian Bottling Company and the Guinness Brewery who have employed a reasonable number of people within the city; however, a larger percentage of people within Benin are into trading and craftworks. Trading activities within Benin are facilitated by the road networks which connect the city to a host of other cities. There are roads in Benin City

leading to and linking the city to all regions of the country, for instance a direct road links Benin City to Asaba and Onitsha in the eastern part of the country, to the western state up to Lagos, to Auchi leading to Abuja and the northern region of the country and finally to Warri leading to Port Harcourt and the rest of the southern region. The significance of this is that trade from and within the entire region seems to influence trade within the city. The craft workers also take advantage of this link but unlike the traders some of them inherited the skills from their forefathers.

Also, the private and public workers employed by the government and private institutions also constitute another set of economic engagement of people within the city. Educational institutions like the University of Benin, Benson Idahosa University etc. requires highly skilled individuals to run the day to day activities within the institutions.

CHAPTER TWO

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

This chapter provides the conceptual framework and past literature related to the current study and particularly focused on sanitation as it relates to open defecation practice, perceptions and factors influencing it practice among households and communities.

2.1.1 Conceptual Framework

2.1.2 Overview of Sanitation

According to Issaka, Enoch and Frank (2019), Open defecation is an old sanitation issue globally, and also an issue that is as old as any developing countries, which persist till date despite its damning effects. Why the practice continues to persist is a serious question largely begging for an answer. Sanitation according to the Millennium Development Goals (MDGs) is access to facilities that hygienically separate human excreta from human, animal and insect contact. Facilities such as sewers or septic tanks, pour-flush latrines and simple pit or ventilated improved pit latrines are assumed to be adequate, provided that they are not public (UN, 2003). In 2005, the MDG Task Force on Water and Sanitation provided the following working definition of "basic sanitation" as "the lowest cost option for securing sustainable access to safe, hygienic and convenient facilities for excreta and silage disposal that provide privacy and dignity while

ensuring a clean and healthful living environment both at home and in the neighborhood of users" (Lenton, Wright, and Lewis, 2005).

Also, in 2010, the United Nations documented the right to safe sanitation as a human right issue and therefore defined it as "access to, and use of, excreta and wastewater facilities and services that ensure privacy and dignity, ensuring a clean and healthy living environment for all" (WHO-UNICEF, 2015). COHRE, UN-HABITAT, SDC and WATERAID, (2008) added that these facilities and services must be safe, physically accessible, affordable and culturally acceptable. The Community Water and Sanitation Agency (CWSA) also defines sanitation as hygiene promotion and the disposal of fecal matter and solid waste. The provision and use of latrines is an important component of the strategy for breaking the cycle of transmission of excreta-related diseases. Sanitation interventions search for ways to promote improvements in environmental sanitation and living conditions of people so as to improve health and productivity of the people and the community at large (CWSA, 2004). According to Asampong, and Abidaru, (2018), People must be provided with toilet facilities that eliminates their contact with human excreta and wastewater by making available toilets that are convenient, clean, easily accessible and affordable by all. Meeting these basic needs and thus reducing the burden of disease related to their insufficiency should be the focus of raising the health status of vulnerable groups (UN-Habitat, 2003). Asampong, and Abidaru, (2018) had explained sanitation ladder as a new way of

analyzing sanitation practices that highlights ways in using improved, shared, and unimproved sanitation facilities and the trend in open defecation. Poor sanitation contributes to 88% of diarrhoea incidences globally (Pruss-Ustun et al, 2008).

Toilet facility coverage is an indicator for improved sanitation and coverage. It is not the same everywhere and every time, that is to say toilet facility coverage changes through time and space. (Asampong, and Abidaru, 2018). As reported by WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation in 2008, 62% of the world's population have access to improved toilet facility, 8% share an improved toilet facility with one or more households, and another 12% use an unimproved toilet facility, whilst the rest (18%) of the people practice open defecation (WHO/UNICEF, 2008). This made Issaka, et al. (2019) to argue that the technical feasibility and acceptability of a particular sanitation system depends on several factors including cost and affordability as well as communal or household characteristics.

2.1.3 Ecological Sanitation (EcoSan)

When discussing open defecation as related to issues of sanitation it is important to understand the term "ecological sanitation". Winblad and Simpson-Hébert (2004) defined ecological sanitation as an approach which promotes a sustainable, closed-loop system, where human excreta is treated as a resource, not waste. Ecological sanitation is based on the idea that urine, faeces and water are resources in an ecological loop. It is an approach that seeks to protect the human

health, prevents pollution of the environment, reduces the use of water in sanitation systems and recycles nutrients to help to reduce the need for artificial fertilizer in agriculture. The key features of ecological sanitation approach are prevention of pollution and diseases caused by human excreta, management of human urine and faeces as resources rather than as waste, and recovery and recycling of the nutrients (Winblad and Simpson-Hébert, 2004).

The emphasis of the ecological sanitation approach is on the closed nutrient cycle, which copies the nature's way of recycling. In the ecological sanitation approach the nutrients of human waste are utilized as fertilizer in food production, whereas conventional approaches to sanitation misplace these nutrients and break the cycle (Winblad and Simpson-Hébert, 2004). There are several benefits in the recycling of the nutrients as it prevents the pollution of the waters, reduces the need for chemical fertilizer, improves the soil structure and enhances the productivity of agriculture (Esrey et al, 1998). The fertilizers derived from human excreta can remarkably improve the food security in the future due to the finite nature of natural resources used in chemical fertilizers. For example, the relatively inexpensive phosphorus we use today will likely cease to exist within 50 years (EcoSanRes, 2008). Ecological approach to sanitation does not strictly determine the suitable technology to be used, but there is a wide range of options, appropriate for both poor and rich livelihoods, and rural and urban population (Rockström et al, 2005). For example, Mattila (2005) has defined ecological

sanitation as an approach that "allows all possible technical alternatives of wastewater and toilet waste treatment as long as the nutrients are recovered and used as fertilizers in food production". Rockström et al. (2005) add that in addition to protecting human health and the environment, ecological sanitation addresses a wide range of cultural needs such as indoor and outdoor installations, anal cleansing by using paper or water, and provides practical solutions to deal with odour arising from urine and faeces.

2.2. LITERATURE REVIEW

2.2.1 Practice of Open Defecation

Most of the open defecation practices are being carried out in rural settings by openly excreting in the open grounds, jungles, bushes and water bodies and it is mostly countries that earn low income. This is mostly associated with rural communities not having access to adequate sanitation (Robert et. al, 2009). Open defecation among children is a norm in most Asian countries (Bangladesh, Philippines, Indonesia, Sri-Lanka), and south east American country (Peru) and some African countries. The common practice of open defecation is by washing the faeces of babies in water bases such as river, canal and ponds. It is a tradition that babies are to defecate in beds, on the laps of their mothers such that the faeces can be absorbed in the clothes which later is to be washed. The faeces of the children are collected or picked using paper, straws, leaves and hoes (Tessema, 2017).

Connell, (2014), reported that in Peru, open defecation is described as "*the most natural thing*," and he described the practice as traditional, habitual, and part of one's daily routine and that these social norms are also held more strongly by open defecators. Based on the study carried out by Thiga and Cholo, (2017), the study concluded that open defecation was a predominant norm practiced in most of the communities in Thika east Sub County. The study established that 23.3% of the sampled homesteads did not have latrines, meaning members of these households were either defecating in the fields, latrines or public toilets. Regarding the effects of open defecation, the study concluded that open defecation had negative effects towards human health, and environmental pollution at large. It also had economic impact on the community in the treatment of related diseases such as diarrhoea. They also argued that open defecation is part of the factors responsible for disease outbreaks, shame and disgust, and if the practice of open defecation can be eliminated, then, the dignity and the quality of life and environment of the community will be restored. Both morbidity and mortality rates will also go down leading to improved quality good health and ultimately the economic wellbeing of the community.

2.2.2 Global Burden of Open Defecation

Open defecation is 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 (Gupta el at, 2015). Two and a half billion people live without access to

improved sanitation and hygiene facilities resulting in 1 billion (15%) people worldwide defecating in the open. Open defecation continues a vicious cycle of disease and poverty making sanitation and hygiene among the most important drivers of health, social and economic environments (Gupta et al, 2015)

The practice of open defecation adds more burden to the already strained health system. Poor sanitation is known to be associated with a number of disease transmission, these include cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio (WHO and UNICEF, 2017). Open defecation is responsible for about 58% of all diarrhoeal deaths. Up to about 842,000 persons in Low middle Income Countries (LMICs) are reported to die due to inadequate water, sanitation, and hygiene annually. The United Nations call to action on sanitation included the elimination of open defecation by 2025 (UN, March 2013).

The global trends on open defection rates shows a declined from 24% in 1990 to 13% in 2015 (WHO/UNICEF, 2015). It has also been estimated that sixteen countries have reduced open defecation rates by at least 25 percentage points during the MDG period, with India (highest in the world) recording a sharp decline of 31% (WHO-UNICEF, 2015). However, a previous Joint Monitoring Program (JMP) estimate on “unfinished business” of the MDGs may offer some viewpoint on these gains. It proposed that until 2014, India was home to 597 million people practicing open defecation, making it the country with the highest number of open defecators globally (WHO-UNICEF, 2014).

Many countries have accomplished great progress in tackling the open defecation issues. For instance, in Vietnam and Bangladesh more than one in three people relieved themselves in the open in 1990, virtually engraved themselves out the practice entirely by 2012. This led to a decrease in the global number from 1.3 billion in 1990 to 1 billion today. 90% of societies living in rural country side still engage in open defecation. The practice is on the rise in 26 countries in Sub-Saharan Africa, with Nigeria the least compliant. Open defecation has risen in the Sub-Saharan region from 23 million in 1990 to 39 million in 2012 and 42 million in 2015 (Conant, 2005; WHO, 2012).

2.3 Factors Contributing to Open Defecation

A number of factors have been found to contribute to the menace of open defecation. There are factors such as lack access to toilets and some toilets are weakly constructed and there are many blocked toilets. But the main issue is the financial capability of people and mentality of the people both in the urban and rural areas. For example, parents and grandparents are seen by their children defecating openly and so they do. It is also a belief among the farmers that defecating in the gardens provides natural fertility to the soil and refreshes their minds (WHO/UNICEF 2014). Connel (2014), stated that improved latrine owners are wealthier than unimproved latrine owners or open defecators also they are more educated than the open defecators. Factors such as absence of money,

shortage of land, tenants living in the houses of the landlords and intentional refusal to build latrines or toilets is a very huge promotion of open defecation.

In a study conducted by Geeta (2014), these factors led to 33.1% of the people involved themselves in defecating in open meanwhile 62.5% used their household toilets and 4.3% used public toilets, (Geeta, 2014). Osumanu and Kosoe (2013) contend that financial constraints present two challenges. First, it inhibits house owners from the provision of household toilets, and secondly, it causes people's inability to afford fees charged by public toilet operators. This implies that if a household cannot afford the fees for the use of a public toilet and cannot also afford to construct a toilet facility, they will practice open defecation (Issaka, et al, 2019).

According to Anata (2013), the total number of people who still cannot afford to access toilets or latrines is 2.5billion particularly in third world countries and out of this figure 1 billion go for open defecation. At least in four persons, one goes for open defecation which later leads to poverty and incapability to construct the toilets. Regarding the use of public latrines as an alternative to open defecation, some people reported public latrines to be time-consuming. Some also reported that it would hamper their work to wait for long hours in the queue just to defecate. (Navin, Shyam, Don Eliseo,Gambhir, Avinash,Pawan, Anup and Koirala, 2019). This common in the school universities as some Students prefer open defecation than waste time waiting in the line this is common to the

university hostels. Concerning the issue of privacy for female, Navin, Shyam, Don Eliseo,Gambhir, Avinash,Pawan, Anup and Koirala(2019), Female members are not comfortable being seen by male members while waiting in queues in front of the public latrines.

A study conducted in Odisha indicated accepting latrine use is poor and this is due to a number of factors such as rituals, gender differences, and the age of the people, marital status, social ways of living and the lifestyle of the people. One third of population from Peri-urban communities in southern Ghana are reported to prefer the use of shared toilets compared to ownership of one due to issues related to land tenure, affordability of one as well as other biological and physical related barriers towards the ownership of a household toilet (GSS, 2008; Keraita et al, 2013; Spencer, 2012).

Proper disposal of faeces in their right places that is the toilet or latrine and adequate sanitation brings about significant changes in the area of environment and health (Mara et al, 2010; Spears et al, 2013) and this leads to remarkable socio-environmental change (O‟Relly, 2014). However, in 2015 it was approximated that 2.4 billion persons did not have access to adequate sanitation and about 1 billion of the population do open defecation, the biggest number living in Sub-Saharan Africa and South Asia (WHO/UNICEF 2015).

Policy negotiations and media interpretations of open defecation in rural areas attribute lack of using latrine to inadequate access to water. This is due to

the big quantity of water that is needed for better latrine maintenance (Coffey et al., 2014). However, with the current data, water is not an obstacle to adequate use of latrine. According to the India Human Development Survey in 2015, reports indicated rural homes that own piped water are just 9%, contributing to the percentage of reduction in open defecation compared to those who do not totally have piped water. The dissimilarity can entirely be accounted for statistically by feeding, earnings, household dimensions, and knowledge, proposing that purely reveals a false correlation with socio economic status, and is not a true effect of access to water on open defecation (Coffey et al, 2014). According to the SQUAT analysis outcomes, less than 1% of males and 5% of females who practice open defecation is due to them not having access to water latrine use. Another connected study piloted on sanitation favorites and views in rural India and Nepal, water was hardly elevated as a limitation on latrine use in 99 in-depth semi-structured interviews (Tarraf, 2016)**.** Open defecation provisional on latrine possession paths the form of intra-household status.

Age and gender of people who practice open defecation is found by many studies to be associated with the habit of open defecation. Coffey et al. (2014) reported that excluding for among young children, it is mostly men who openly defecate compared to the women. It was also identified that throughout late infancy and youth years, there is lessening of open defecation in young females with entree to latrines. Two motives were given for the variances between females

and males. First, a preference among young women to use latrines, or a north Indian cultural norm that keeps women in their reproductive years inside the home. Similar differences in open defecation were accounted among older people. Most people in the adult age range, open defecation increases with age. This perhaps mirrors mature persons, on typical and are capable of moving further easily than at homes and to endorse their favorites. Secondly, the study also indicated that, grown-up individuals are associates of previous cohorts, born into past years when defecating openly was common than it is today. However, open defecation falls faster among the oldest household members in the sample (Coffey et al, 2014)

2.4 Attitudes Towards Open Defecation

Open defecation and human excreta are regarded in difference ways by different cultures and it is interesting to know. Some tolerate it to a certain extend while for others the sooner it is out of sight, the better (Asampong, and Abidaru, 2018). Some cultures regard it as extremely repulsive and disgusting while others have tolerated the handling of human waste (Asampong, and Abidaru, 2018). In some parts of urban China, night soil workers cart away human waste in “honey carts” and in Vietnam there has been a long tradition of fertilizing rice fields with fresh human feces (Jewitt, 2013). In many cultures, management of human excrete is regarded as unmentionable hence designated it as the work of the lower social status people (Mozaffar, 2014). It is interesting to note here how the

indifference to public dirt and filth is contradicted with private cleanliness, emphasis being placed on the purity of the body. Therefore, “when waste is taken out of the home compound, it becomes “public” dominion, so everyone is fit to scrapheap garbage as well defecate in it” (Jewitt, 2013). Similarly, it is paradoxical how Indians are very particular about the removal of filth from their homes but indifferent to what happens to it afterwards (Mozaffar, 2014). According to Navin, et al(2019), open defecation was perceived to be deeply influenced by the prevailing societal practice since historical times as Participants expressed open defecation as a regular habit for which they had never felt the need for alternatives.

2.5 Beliefs and Perceptions about Open Defecation

A study conducted by Coffey et al. (2014) in India showed people’s descriptions of good and bad regarding defecating openly and use of latrine. 47% of those who openly defecate say its for pleasurable, provides comfort and for convenience. Those who openly defecate even though they are able to have latrine facility at their homes, at least 74% of them cited unchanged explanations. In that same study, other Participants stated that open defecation provides them a chance walking in the morning, visit their gardens and enjoy the cool air which is fresh in the morning. A study conducted established universally-believed views on the paybacks of open defecation, noticeably related to what is reported above (Jenkins and Curtis, 2005). A number of individuals look at open defecation as part of

good, healthy and worthy life. Belcher (1978), reported that in Uganda, in the late 1940s, people were afraid to use latrines because their fixed location would provide sorcerers with easy access to their excreta for devilish purposes; and faeces of one's own in contact with another could bring about "*spiritual contamination*," hence defecating at random in the bush and surroundings was considered a safer alternative (Issaka et al*,* 2019). Cotton, et al (1995) pointed out that the importance of traditional beliefs and perceptions in latrine use and open defecation was also amply demonstrated in Kumasi, Ghana, when reported that a householder refused to use a latrine because he was a Muslim and the latrine faced the direction of Mecca (Issaka, et al*,* 2019). Similar superstitious traditional beliefs have been reported by Water Aid (2008) in some communities in Burkina Faso and Mali as well as Tamale (Ghana), and for the Idoma people in Nigeria, and by Osumanu and Kosoe (2013) in Wa (Ghana).

2.6 Effects of Open Defecation

Open defecation in whichever way and form, its practice poses significantly some adverse effects on the people and on the environment.

2.6.1 Health Effect

The practice of open defecation adds more burden to the already strained health system. Poor sanitation is known to be associated with a number of disease transmission, these include cholera, diarrhoea, dysentery, hepatitis A, typhoid and polio (WHO and UNICEF, 2017). Open defecation is responsible for about 58%

of all diarrhoeal deaths. Up to about 842, 000 persons in Low middle Income Countries (LMICs) are reported to die due to inadequate water, sanitation, and hygiene annually.

Deadly diarrhoea is basically as a result of open defecation and it is estimated around 2000 children under the age of five are victims of this and in every 40 seconds they die (WHO 2014), this is something that is avoidable and is mostly in densely populated countries like India (Vyas et al, 2014). Children at this age don't differentiate between the good and bad things and everything in meant for them to be put in the mouth. In the rural areas where open defecation is rampant by both human beings and animals. Children end up eating them and bacteria, viruses and parasites find comfortable residence starts infecting their intestines resulting to diarrhoea (Ngure et al, 2014). Open defecation poses a serious public health threat to children and is one of the biggest obstacles to meeting the Millennium Development Goals (MDGs). Open defecation regarded as unsafe disposal of feces among other methods increases the risk of disease transmission. This behavior enables the spread of pathogens and its practice is related to most cases of diarrhoea. All this is as a result of open defecation, improper latrine or toilet facilities, unsafe water and unhygienic practices (Robert et. al, 2009).

In Sub-Saharan Africa, from 1990 to 2010 the act of open defecation had decreased by 11%, however, the total population of persons doing open

defecation has been reported to have a 33 million increase in the same period as a result of population increase. In this period, the practice of open defecation exercise was still more reported in rural areas (35%) compared to urban areas (8%) in 2010 (WHO/UNICEF, 2012). World Health Organization reported that sanitation involves a number of practices and among all open-air defecation has been rated the most threatening. India leads in open defecation globally with 60% of the people practicing open defecation. There is high rate of diseases and deaths because of improper waste disposal especially human waste, unclean drinking water and untidy hygiene. of the diseases, diarrhoea is the chief reason for demise in the young ones. The poor hygiene is also associated with schistosomiasis, helminth contaminations, enteric fever and trachoma. The poor sanitation use apart from diseases also causes other significances not related to health especially to the girls and women such as safety and confidentiality and absenteeism in school (WHO, 2014; WHO/UNICEF, 2013).

The United Nation hopes to meet the Sustainable Development Goals (SDG 6 target 2) of ensuring that by 2030 open defecation is ended with an indication everyone gets access to suitable and justifiable sanitation and cleanliness taking in to consideration the girls and women who are the most exposed to these conditions (David and Macharia, 2015).

In Ethiopia, most Public Health problems are as a result of poor sanitation and children are the ones greatly affected (Ayalew et al., 2008). Communicable

infections have been reported to be 60% to 80% of health complications in Ethiopia and these problems are due to unclean water, insufficient sanitation and poor hygiene (FDREMOH, 2011; Thewodros, 2016). Sanitation activities are time and again not motivated by health in other countries: for instance, in countryside Benin, Jenkins and Curtis (2005) found out that well-being benefits were not an essential characteristic stirring latrine acceptance. Equally, open defecation is not extensively acknowledged amongst rural north Indians as a danger to health. Again, in a study by Coffey et al. (2014), Participants were asked to two villages, one in which everyone is involved in defecating openly and one where nobody openly defecates: 43% of all Participants reported that open defecation is good for children other than going to defecate in latrine for their health. This figure even takes in to account of many Participants who actually are using latrines. Among those who defecate in the open, fully 51% report that widespread open defecation would be at least as good for child health as latrine use by everyone in the village. In another survey, the researchers asked an open-ended question about the possible benefits of latrine use and open defecation. Amongst those who defecate in the open, only 26% mention health perfections from using latrine as an advantage that possibly will effect from putting up a latrine; additionally, those who regularly talk about the convenience of having a latrine for people who already have stomach ailments. In that same study, further open-ended question about why children get diarrhoea. Only 26% responded with an answer that

displays an understanding of any possible infectious causes of diarrhoeal disease (Taraf, 2016).

2.6.2 Effects on Women

Time spent collecting water is substantial and is mostly a household chore of the women (Okun, 1988). In most societies, it is the women's primary responsibility for the management of household sanitation and health. Inadequate water and sanitation causes increases in time, health, and care-giving burdens on women (Ngorima et al, 2008). For millions of women across the world inadequate access is a source of shame, physical discomfort and insecurity. There is also loss of dignity associated with a lack of privacy in sanitation accesses (UNDP, 2006).

Open defecation puts women's dignity and safety at risk. Many women feel constrained to relieve themselves in the dark for reasons of privacy, thus exposing them to rape and sexual assault (Tarraf, 2016). Furthermore, Tarraf (2016) added that 30% of marginalized women are violently assaulted every year as the lack of basic sanitation forces them to travel long distances to meet their needs. 24% of girls drop out of school, as many facilities do not have toilets – this problem is exacerbated when they reach menarche (Tom, 2015). A recent research has established a statistically significant association between open defecation and pregnancy outcomes. According to Pinaki Panigrahi, a professor of epidemiology at the University of Nebraska Medical Centre, open defecation could have an effect on women's 31enitor-urinary tract due to the proximity of

the vagina and the anus, which resulted in a correlation between high numbers of stillborn, preterm births and spontaneous abortions (Mukunth, 2015).

2.6.3 The Economy

Beyond the human waste and suffering, the global deficit in water and sanitation is undermining prosperity and retarding economic growth (UNDP, 2006). Poor sanitation has many actual or potential negative effects on populations in a country (Kov et al, 2008). Productivity losses linked to that deficit are blunting the efforts of millions of the world's poorest people to work their way out of poverty and holding back whole countries.

Poor sanitation practices have negative effects on the economy and national development as they cripple workers‟ productivity, their longevity, and their ability to invest and save.

Open defecation has greatly affected the economic status of the people especially those with poor sanitation. In Kenya Poor sanitation is reported to cost up to US$ 324 million with open defecation accounting for up to US$ 88 million annually. These expenses are mainly due to the resultant deaths or ill-health from diarrhoea and other diseases associated with sanitation which accounts for about US$244 million. In Kenya it is the poor population that mostly engage in open defecation that is about 270 times practicing open defecation than the rich. However open defecation also has some social expenses like losing dignity and safety and this mostly affects girls (school going) and women (disabled) as well

as gender violence to the women especially at night when going to look for where to defecate (Water and Sanitation Program, 2014).

Open defecation is chosen willingly or by compulsion by people in the communities. Understanding the personal preferences, perceptions, religious beliefs, family/cultural norms, societal practices, and availability of resources may help design better interventions for alleviating the practice of open defecation. There is a need to give careful considerations for understanding the motivations among students particularly, the female students for open defecation in order to address open defecation and promote the use of toilet in a more gender equitable manner, there is also need for clear understanding on perception of individual on open defecation.

Poverty is also a very important element in the economy. Inadequate water supplies are both a cause and an effect of poverty and their effects exacerbate the poverty trap (Sullivan et al, 2003). Poverty compounds the issue of water scarcity in many regions of the world causing a vicious cycle (Amokrane et al, 2007). Today, many of the 10 million childhood deaths each year are caused by diseases of poverty, diarrhoea and pneumonia (Burström et al*,* 2005).

According to Kundan and Pandey (2013), improper sanitation and open defecation indirectly contribute to poverty as they lead to contamination or pollution of the environment (water sources, soil and land). Once ruined by disease, children are unable to complete their formal education, and are later

hindered in their capacities to work, provide for themselves and educate their children. Illness within the community's senior population represents a significant drain on family budgets and healthcare resources. These factors only perpetuate the poverty cycle. (Tarraf, 2016).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Research design according to Andrew (2018) is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the research problem. Research design varies depending on the particular problem of the study. It addresses the methodological framework that will be used to examine and assess the effect and implication of open defecation within Egor Local government of Edo state.

The research design, type and sources of data for the study will help to accomplish the study objectives. In particular, focus is on the study populations/sample frame and its characteristics, sampling technique chosen, and a description of the choice of data collection instruments, and methods of data measurement, analysis and presentation.

In this study, the descriptive survey type of design was adopted. Shield, Patricia and Rangarajan (2013) define descriptive survey as a tool employ to describe characteristics of a population or phenomenon being studied. They further affirm that it can only answer *'what', 'where', 'when' and 'how'* questions that this research seeks to answer.

3.2 Sources of Data

Primary data was collected through direct observation, interviews, photographs and administration of structured questionnaires to form the basis of maps used in the research work.

Secondary data used for this research was sourced from published and unpublished works in reputable journals, internet, text books, theses, monographs, seminar papers, national newspapers, publications of governments.

3.3 Sample Size Determination

The sample size adopted for the study is calculated below from using 0.05 degree of accuracy and 93% accuracy level. The sample size was determined by using the formula according to (Yamane, 1996). The sample size used in the study was derived using the sample size determination formula below;

$$n = \frac{N}{1+\propto^2 N}$$

Where:

Where, N = Total Population, ∝= degree of freedom, n = the Sample Size

Adopting a 95% confidence interval will give a degree of freedom (or margin of error) of 0.05 (i.e. e =0.07).

Taking, N= 339,899, e = 0.05, this generated a sample size of 400 for the totality of the study area.

$$n = \frac{339,899}{1+(0.0025)\times 339,899}$$

n= 400

Using the above formula, the sample size (n) is 400 people. Thus, 400 questionnaires will be administered across the selected areas,

3.4 Data Collection Methods

Data for this study was collected through questionnaire survey. Close and open-ended questions were designed to elicit the perception of the people. The questionnaire was divided into two sections. The first section was designed to collect data on the socio-demographic characteristics within the study population such as gender, income level and age and other relevant information. The second section was designed to collect data on how the practise of open defecation and the environmental and health consequences.

3.5 Data Collection Procedure

Questionnaires were administered to the sample population in the study area systematically. Questionnaires were administered to household heads, heads of motor parks, operators of public toilets and head of corporate bodies in the study area. The questionnaires were administered personally by the researcher to the sampled population and retrieved at the point of administering. Respondents were guided and sufficiently enlightened on the need to be objective to provide the needed information for the study by the researcher.

3.6 Analytical Techniques

Data would be presented in tables using simple percentage. Hypothesis 1 which states that there is no significant relationship between open defecation and outbreak of water borne diseases in the study area would be tested using Pearson's Product Moment Correlation Coefficient (PPMC). All statistical analyses into this research work were carried out using the Statistical Package for the Social Sciences (SPSS) version 22.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

This chapter shows the demographic and also presents the impact of open defecation in the community on the study area. It therefore provides answers to the research questions and testing of the hypothesis. It provides an approximate indication of the representatives of the sample for the total population of the area.

4.1.2 Presentation of Survey Details

A total of 400 copies of questionnaires were taken to the field for distribution among respondents in the study area and all the 400 copies were returned valid for analysis. From the questionnaire administered to the various neighborhoods in the study area, 28.5% (114) were distributed at Ugbighoko, 27.3% (109) at Uwelu, 21.0% (84) were distributed at Egor, 21.5% (86) were shared at Uselu, while 1.8% (7) were shared at Ekiadolor. This is shown in table 4.1 while the results of the analysis are discussed below.

Table 4.1: Community of Respondents

Communities	Frequency	Percent (%)
Ugbighoko	114	28.5
Uwelu	109	27.3
Egor	84	21.0
Uselu	86	21.5
Ekiadolor	7	1.8
Total	400	100.0

Source: Field Survey, 2021

4.2 Demographic Characteristics

4.2.1 Sex of Respondents

The result of the sex distribution of the respondents in the study area indicates that the proportion of respondents who are males in the study area is 55.5% (222); with the proportion females given as 44.5% (178). This implies that from the sampled population, the proportion of males is more than the proportion of females.

Table 4.2: Sex of Respondents

Sex of respondents	Frequency	Percent (%)
Male	222	55.5
Female	178	44.5
Total	400	100.0

Source: Field Survey, 2021

4.2.2 Marital Status of Respondents

Table 4.3 shows the marital status of respondents in the study area. The proportion of respondents who are single is represented as 43.5% (174), the proportion who are married is 40.6% (162), while the proportion who are divorced is 6.3% (25) and the proportion of the population who are widowed is 9.8% (39).

Table 4.3: Marital Status of Respondents

Marital status	Frequency	Percent (%)
Single	174	43.5
Married	162	40.5
Divorced	25	6.3
Widowed	39	9.8
Total	400	100.0

Source: Field Survey, 2021

4.2.3 Marital Status of Respondents

Table 4.4 reveals the age of respondents in the study area. From the table, the proportion of respondents in the study area who are between 18-24 years is represented as 24.0% (96), the proportion who are between 25-34 years is given as 29.0% (116), the proportion of respondents between 35-44 years are 24.0% (96). The proportion of respondents who are between 45-54 years is given as 11.0% (44), the proportion of respondents who are between 45-54 years is given as 8.3% (33), while the proportion of respondents who are above 65years is given as 3.8% (15).

Table 4.4: Age of Respondents

Age	Frequency	Percent (%)
18-24	96	24.0
25-34	116	29.0
35-44	96	24.0
45-54	44	11.0
55-64	33	8.3
Above 65	15	3.8
Total	400	100.0

Source: Field Survey, 2021

4.2.4 Educational Level of Respondents

Table 4.5 depicts the level of education of the respondents in the study area. The proportion of the sampled population with non-formal education is represented as 13.5% (54), the proportion of respondents who have at most a primary education is represented as 12.8% (51 of the total sampled population), the proportion of respondents who have at most a secondary education is given as 33.0% (132 of the total sampled population) while the proportion of respondents who have a tertiary education have a representation of 40.8% (163 of the total sampled population).

Table 4.5: Respondents' Educational Level

Education of respondents	Frequency	Percent (%)
Non formal education	54	13.5
Primary education	51	12.8
Secondary education	132	33.0
Tertiary education	163	40.8
Total	400	100.0

Source: Field Survey, 2021

4.2.5 Occupation of Respondents

Table 4.6 reveals the occupation of respondents in the study area. From the table, the proportion of the sampled population who are students is given as 23.5% (94), civil servants is given as 16.3% (65), professionals is given as 12.5% (50), the proportion of who are traders is represented as 25.5% (102 respondents), the proportion of respondents who are into farming claimed 11.5% (46 respondents), 4.8% (19) respondents are unemployed while Respondents who are retired have a representation of 6.0% (24 respondents).

Table 4.6: Occupation of Respondents

Occupation of Respondents	Frequency	Percent (%)
Student	94	23.5
Civil servant	65	16.3
Professional	50	12.5
Business/trade	102	25.5
Farmer	46	11.5
Unemployed	19	4.8
Retired	24	6.0
Total	400	100.0

Source: Field Survey, 2021

4.2.6 Duration of Time Spent in the Community

Table 4.7 reveals the duration of the respondents residence in the study area. From the table, the proportion of the sampled population who stayed below 5 years is given as 22.3% (89), those who have stayed for 5 – 10 years is given as 27.3% of the total population (109), 10 – 20 years is given as 28.0% (112), while the proportion of who are respondents who stayed for over 20 years is represented as 25.5% (90 respondents). A total of 77.7% of the respondents for this study have resided in the study area for more than five years.

This would reflect in the information and data that would be generated on the menace of open defecation in the study area.

Table 4.7: Duration of Time Spent in the Community

Years of Residence	Frequency	Percent (%)
Below 5yrs	89	22.3
5-10yrs	109	27.3
10-20yrs	112	28.0
Over 20yrs	90	22.5
Total	400	100.0

Source: Field Survey, 2021

4.3. Environmental Hygiene

4.3.1 Respondents' Rating on the Quality of Environmental Hygiene

Table 4.8 reveals the Respondents' rating on the quality of environmental hygiene in the study area. From the table, the proportion of the sampled population who believed that it is poor is given as 12.8% (51), those who believed it is fair is given as 38.8% of the total population (155), according to 43.0% of the population, it is Good, while 4.0 % believed that it is excellent.

The poor quality of environmental hygiene in the study has not attracted the attention of the local authority. Lack of public sanitation facilities, poor waste management and generation attitude of littering has made most of the communities the local government unlivable. This is made worse by the formation of slums in some quarters where open defecation is widely practiced.

Table 4.8: Respondents' rating on the Quality of Environmental Hygiene

Hygiene	Frequency	Percent (%)
Poor	51	12.8
Fair	155	38.8
Good	172	43.0
Excellent	22	5.4
Total	400	100.0

Source: Field Survey, 2021

4.3.2 Access to Portable Water in the Study Area

Table 4.9 reveals the respondents' rate on the access to water in the study area. From the table, the proportion of the sampled population who have access to river is given as 8.3% (33), those who have access to reservoir is given as 34.3% of the total population (137), those who have access to well is 17.8% of the total population (71), those who have access to borehole is 38.5% of the total population (154), and those who have access to other source of water is 5.3% of the total population (21.).

Drawing from table 4.9, there is no water infrastructure provided by government for the residents in the study area. a good percentage of the residents relies on personal borehole and rain fed reservoir for water. Given the high cost of constructing a borehole and a reservoir, most households are compelled to rely on

river and rain water. But surface water is a major recipient of open defecation and hazardous waste which has made it unsafe for domestic purposes.

Table 4.9: Access to portable Water in Egor Local Government Area

Access to portable water	Frequency	Percent (%)
River	33	8.3
Reservoir	137	34.3
Well	71	17.8
Borehole	154	38.5
Others	5	1.3
Total	400	100.0

Source: Field Survey, 2021

4.3.3 Availability of Toilets Facilities in the Study Area

Table 4.10 shows the Respondents' access to different types of toilet across the study area. From the table, the proportion of the sampled population who have water closet is given as 55.2% (221), those who have access to pit latrine is given as 37.3% of the total population (149), those who have bucket/pan is 7.5% of the total population (30).

Table 4.10 showed that there is no public toilets in the study area, only 48.5% of residents have access to water closet. A good chink of the population uses pit latrine which cannot be said to be hygienic. The pit latrine are located in places where there are exposed to residential housing which makes them breeding

grounds for mosquito. Residents that do not have access to the toilets facilities in table 4.9 resort to open defecation, which is very discomforting amongst girls and women folks.

Table 4.10 Access to Toilet Facilities

Respondents Access to Toilet Facilities	Frequency	Percent (%)
Water closet	221	55.2
Pit latrine	149	37.3
Bucket/Pan	30	7.5
Total	400	100.0

Source: Field Survey, 2021

Plate 4.1: A toilet with Indian toilet seat in a bad condition.

Source: Author's Fieldwork, 2021.

Plate 4.2: A pit toilet in bad condition.

Source: Author's Fieldwork, 2021.

Plate 4.3: A poor state of toilet in the study area

Source: Author's Fieldwork, 2021.

Plate 4.4: Expected standard of household toilet owned by few residents in the study area

Source: Author's Fieldwork, 2021.

4.3.4 Rate of Open Defecation in the Study Area

Table 4.11 reveals the Respondents' rate on the open defecation in the study area. From the table, the proportion of the sampled population who believed that it is very high is given as 11.5% (46), those who believed it is high is given as 32.2% of the total population (129), according to 42.3% of the population, it is low, while 14.0 believed that it is very low.

Table 4.11 showed that the practice of open defecation is a menace in the study area. a good percentage of the population still practice open defecation due to the lack of access to good sanitation facilities. Expectedly, this practice is not

without health and environmental consequences. Apart from the stench that oozes from it, children and women are highly vulnerable to the health implications of open defecation.

Table 4.11 Rate of the Open Defecation in the study area

Rate of open defecation	Frequency	Percent (%)
Very high	46	11.5
High	129	32.2
Low	169	42.3
Very low	56	14.0
Total	400	100.0

Source: Field Survey, 2021

4.3.5 Factors that Informed Choice of Residence

Table 4.12 shows the choice of respondents in settling in the community. From the table, the proportion of the sampled population who settled because it's their birth place is given as 31.7% (127), those who settled for business purposes is given as 30.5% of the total population (122), respondents who settled because of nearness to place of work is 22.8% of the population, while 15.0 settled because of environmental hygiene.

Drawing from table 4.12, a good percentage of residents chose to reside in places for business purposes and easy access to work place. The lack of public toilet facilities in commercial hubs within the local government compels people to

practice open defecation. In most offices (work), provision of adequate toilet facility is still very poor, in offices where toilet facilities are provided, most cannot be said to be safe, thus people still prefer to look out for undeveloped plots where they can openly defecate. This is not without health and environmental consequences.

Table 4.12: Presents data on Choice of Resident in the Study Area

Factor	Frequency	Percentage (%)
Birth place	127	31.7
Business purpose	122	30.5
Proximity to office	91	22.8
Environmental hygiene	60	15.0
Total	400	100.0

Source: Field Survey, 2021

4.3.6 Factors Responsible for the Practice of Open Defecation in the study area

Table 4.13 shows the respondents' reason for open defecation in the study area. From the table, the proportion of the sampled population who believed the reason for open defecation can attributed non-functional toilets is given as 22.3% (89), 11.3 % of the respondents believed it's as a result of inadequate toilet, respondents who believed it's as a result poor condition of toilet 39.4% (158

respondents), 25.5 % (102 respondents) of the respondents confirmed that it's as a result of personal choices, while 1.5 % believed it is as a result of other reasons.

Table 4.13 showed that the inadequacy of toilets facilities and poor condition of existing one's accounts more for why people resort to open defecation in the study area. Expectedly, 25.5%of residents said they practice open defecation because it is their choice, this is only possible when good toilet facilities are not available. In some houses, existing toilet facilities are not functioning, and the cost of replacement and renovation is not easily affordable for many households given the high cost of toilet facilities. Hence, open defection would continue unabated.

Table 4.13: Factors Responsible for the practice of Open Defecation

Factors	Frequency	Percent (%)
Non-functional Toilet facilities	89	22.3
Inadequate number of toilets	45	11.3
Poor conditions of toilets	158	39.4
Personal choice	102	25.5
Others	6	1.5
Total	400	100.0

Source: Field Survey, 2021

4.3.7 Water borne disease caused by Open Defecation

Table 4.14 shows the Respondents' awareness on water borne disease pose by open defecation. From the table, the proportion of the sampled population who are aware that open defecation can cause water borne disease is given as 92.8% (371) while 7.2 % of the population are not aware.

Table 4.14 show that residents of the study area are aware of the health consequences of percent of residents that said they are aware of water borne disease caused by artisanal refinery illustrate the severity of the health problems, but there is still no visible efforts on the ground to tackle open defecation in the place.

Table 4.14 Perception of residents on water borne diseases caused by open defecation in the study area

Perception	Frequency	Percent (%)
Yes, I'm aware	371	92.8
No, I'm not aware	29	7.2
Total	400	100.0

Source: Field Survey, 2021

4.3.8 Outbreak of Diarrhoea and Open Defecation in the study area

Table 4.15 analyses the Respondents' awareness on diarrhoea pose by open defecation. From the table, the proportion of the sampled population who are

aware that open defecation can cause diarrhoea is given as 77.7% (311) while 22.3 % (89) of the population are not aware.

Table 4.15: Present Data on Outbreak of Diarrhoea Caused by Open Defecation

Perception	Frequency	Percent (%)
Yes, I'm aware	311	77.7
No, I'm not aware	89	22.3
Total	400	100.0

Source: Field Survey, 2021

4.3.9: Open Defecation and Water Pollution

Table 4.16 depicts the Respondents' awareness on water pollution and contamination pose by open defecation. From the table, the proportion of the sampled population who are aware that open defecation can lead to water pollution is given as 93.7% (375) while 6.3 % (25) of the population are not aware.

Table 4.16: Presents perception of residents on contamination of water by open defecation

Perception	Frequency	Percent (%)
Yes, I'm aware	375	93.7
No, I'm not aware	25	6.3
Total	400	100.0

Source: Field Survey, 2021

4.3.10 Open Defecation Poses Visual/Olfactory Pollution

Table 4.17 depicts the Respondents' awareness on visual and olfactory pollution pose by open defecation. From the table, the proportion of the sampled population who are aware that open defecation can lead to visual and olfactory pollution is given as 59.3% (237) while 40.7 % (163) of the population are not aware.

Table 4.17 Respondents' Awareness on if Open Defecation Poses Visual and Olfactory Pollution

Perception	Frequency	Percent (%)
Yes, I'm aware	237	59.3
No, I'm not aware	163	40.7
Total	400	100.0

Source: Field Survey, 2021

4.3.11: Recommendations from the residents on how to curtail the Problem of Open Defecation

Table 4.18 depicts the Respondents' thoughts on how to curtail the problem of open defecation. From the table, the proportion of the sampled population who think the solution to open defecation is provision of adequate toilet facilities for both public and private uses is given as 33.5% (134), the respondents who think the solution to open defecation is Sensitizing the public on why it is good to maintain good hygiene is given as 28.7 % (115 respondents) while 37.8 % (151) of the population think both provision of public toilet and maintenance of good hygiene are the ways to curtail problem of open defecation.

Table 4.18: Recommendations on how to address open defecation in the study area

Solutions to open defecation	Frequency	Percent (%)
Provision of adequate toilet facilities for both public and private uses	134	33.5
Sensitizing the public on why it is good to maintain good hygiene	115	28.7
Both option	151	37.8
Total	400	100.0

Source: Field Survey, 2021

4.3.12: Respondents' Thoughts on who should be Responsible for eradication of Open Defecation

Table 4.19 reveals the Respondents' thoughts on who should be Responsible for eradication of open defecation. From the table, the proportion of the sampled population who think the it is the responsibility of the government is given as 35.1 % (140), the respondents who think it is individual and corporate responsibility is given as 28.2 % (113 respondents) while 36.7 % (147) of the population think both responsibility of the individual, cooperate organization and government to eradicate the problem of open defecation.

Table 4.19 show that respondents are aware that open defecation is a problem that requires the efforts of government, nongovernmental organizations and individuals. The place of government cannot be over stated because of the huge cost required to providing sanitation facilities in the study area. However, corporate institutions must see the need to make toilet facilities available and hygienic for use.

Table 4.19: Thoughts on who should be Responsible for eradication of Open Defecation.

Perception	Frequency	Percent (%)
Government intervention	140	35.1
Individual and corporate responsibility	113	28.2
All of the above	147	36.7
Total	400	100.0

Source: Field Survey, 2021

4.3.13: Respondents' thoughts on how to address Open Defecation.

Table 4.20 shows the Respondents' thoughts on how to address problem of open defecation. From the table, the proportion of the sampled population who think problem of open defecation can be addressed through public awareness of good hygiene is 36.7 % (147), the respondents who think problem of open defecation can be addressed through provision of toilet facilities by the government is given as 50.0 % (200 respondents) while 13.3 % (53) of the population think problem of open defecation can be addressed by stopping open defecation.

Table 4.20 Suggestion on how to address Open Defecation.

Perception	Frequency	Percent
Public awareness of good hygiene	147	36.7
Government should provide toilet facilities	200	50.0
Open defecation should be prohibited	53	13.3
Total	400	100.0

Source: Field Survey, 2021

Test of hypothesis and Discussion of Results

Hypothesis 1

Ho: There is no significant relationship between open defecation and outbreak of water borne diseases in the study area.

Correlations

Test Statistics of Correlation between open defecation and outbreak of water borne diseases

			Respondent Rate Of Open Defecation In This Community	Is The Respondent Aware That Open Defecation Poses Water Borne Disease
Spearman's rho	How Would The Respondent Rate Of Open Defecation In This Community	Correlation Coefficient	1.000	-.100
		Sig. (2-tailed)	.	.064
		N	400	400

	Is The Respondent Aware That Open Defecation Poses Water Borne Desease	Correlation Coefficient	-.100	1.000
		Sig. (2-tailed)	.064	.
		N	400	400

The outcome of the test of hypothesis showed a strong positive correlation between open defecation and water borne diseases, r (400) = .64, p< .001

The outcome of the test of hypothesis 2 showed a strong positive correlation between open defecation and water borne diseases, r (344) = .81, p< .001

Discussion of Results

The outcome of test of hypothesis revealed that open defecation is a major cause of water borne diseases, particularly diarrhoea in the study area. The case is not different in other towns and cities in Nigeria as the provision of public sanitation facilities and water still leave much to be desired scholars have reported that there is a slight variation between the practice of open defecation between rural and urban areas on the one hand, and between slums, city centers and the urban fringe on the other hand (See Connell, 2014). This study also revealed that children are highly vulnerable to the menace of open defecation. Deadly diarrhoea is basically as a result of open defecation and it is estimated around 2000 children

under the age of five are victims of this and in every 40 seconds they die (WHO 2014), The lack of mobile toilet facilities in public gathering in Egor local government has made the practice of open defecation for children commonplace. Some residents affirmed that they practice open defecation for personal reasons, but this can be adduced to the high cost of toilet faculties and poor access to water. As pointed out by Tarraf (2016), Open defecation puts women's dignity and safety at risk. Many women feel constrained to relieve themselves in the dark for reasons of privacy, thus exposing them to rape and sexual assault, but this does not worry local authorities. Personal observation revealed that the residents recognize the health and environmental consequences of open defecation, but they are not willing to expend money to make sanitation facilities available due to poverty. This is in agreement with the observations of Gupta et al., (2015) that open defecation continues as a vicious cycle of disease and poverty making sanitation and hygiene among the most important drivers of health, social and economic environments.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The menace of open defecation in Nigerian cities is no longer a matter for debate. In 2019, Nigeria surpassed India in open defecation to assume the unenviable position of the country with the highest rate of open defecation in the world. The 700 billion dollars borrowed by the Nigerian Government from the World Bank in April 2021 to tackle open defecation illustrates the severity of the problem. But there is no robust framework to ensure that the target to reduce open defecation drastically before 2025 would be met. This study revealed that lack of sanitation facilities, good water and poverty accounts for open defecation in Benin City. The annual increase in population and slums formation has overstretched housing capacity. Residents now resort to open defecation in slums due to the lack of toilets facilities and it is of enormous health and environmental consequences. In some household, toilets facilities are not adequate, while in others, existing ones are not usable. Hence, residences are forced to practice open defecation even when it is not dignified. Women and children are more vulnerable to the health consequences of open defecation, but males are not also immune to it. This study also revealed that most motor parks and informal businesses do not have toilet facilities. The few informal houses used for business that have toilet facilities are

not appealing to business owners, thus people still prefer open defecation to avoid the health risk of using unhygienic toilet facilities.

5.2 Recommendations

The study recommends the following solutions to tackle open defecation in the study area

1. Government should demonstrate sincerity and a political way to tackle the menace of open defecation through the judicious utilization of borrowed and ecological funds. Public toilets facilities should be provided in strategic places (motor parks, market places and commercial hubs) to guide against open defecation.
2. Government should provide portable water in the study area as this would help residents to become more hygienic and willing to avoid open defecation. The lack of water is a major factor that compels households with toilets facilities to resort to open defecation.
3. Household owners should be enlightened more on the health consequences of open defecation through local channels of women groups, youth groups, and through radio and television programs.
4. The provision of public toilets by government should take into cognizance the need of children, and staffed to ensure efficient and effective management

5 Government should intensify toilet financing for households to address the problems of toilet deficits in households

6 Legislative instruments should be employed to enforce environmental laws that guides against open defecation

7 Mobile toilets should be encouraged in public events, religious gathering and political rallies to guide against the menace of open defecation

8 Research on open defecation should be more participatory and the ideas to combat open defecation should be generated from the people as this would help policies makers to take into cognizance the peculiarities of issues that causes open defecation in the communities.

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APPENDIX 1

DEPARTMENT OF GEOGRAPHY AND REGIONAL PLANNING,

FACULTY OF SOCIAL SCIENCES,

UNIVERSITY OF BENIN,

BENIN CITY.

Dear Sir/ Madam,

I am an undergraduate of the above-named University, where I am undertaking a full time (B.Sc.) Degree programme. I am carrying out research on the topic "The incidence of open defecation in Benin City using Egor Local Government Area as a case study". I hereby solicit for your compliance in completing this questionnaire and I assure you that your identity and response will be treated with utmost confidentiality and will be used strictly for academic purposes only.

Community: _____

SECTION A: DEMOGRAPHIC and SOCIO-ECONOMIC CHARACTERISTICS

1. Sex of respondent (a) Male [ ] (b) Female [ ]
2. Marital Status (a) Single [ ] (b) Married [ ] (c) Divorced [ ] (d) Widowed [ ]
3. Age (a) 18-24 [ ] (b) 25 – 34yrs [ ] (c) 35 – 44 [ ] (d) 45 – 54 [ ] (e) 55-64 [ ] (f) Above 65

4. Educational Level (a) No formal education [ ], (b) Primary Education [ ], (c) Secondary Education [ ], (d) Tertiary Education

5. Occupation(a) Student [ ] (b) Civil Servant [ ] (c) Professional [ ] (d) Business/Trade [ ] (e) Farmer[ ] (f) Unemployed [ ] (g) Retired [ ]

SECTION B:

6. How long have you lived in this community? (a) Below 5 Years [ ](b) 5-10 Years [ ] (c) 10-20 Years [ ] (d) over 20 Years

7. What informed your choice of settling in this community? (a) Birth place[ ] (b) Business purpose[ ] (c) Proximity to office [ ] (d) Environmental Hygiene [ ]

8. How would you rate the quality of environmental hygiene in this community? (a) Poor [ ] (b) Fair [ ] (c) Good [ ] (d) Excellent [ ]

9. Do you have access to water? YES [ ] NO [ ]

10. If YES, what type of water do you have access to? (a) River (b) Reservoir (c) Well (d) Borehole (e) Others……

11. Do you have a toilet in your house? YES [ ] NO [ ]

12. If Yes what type of toilet? (a) Water Closet (b) Pit Latrine (c) Bucket/Pan

13. Do you practice open defecation? YES [ ] NO [ ]

14. Do you consider open defecation as a major factor responsible for poor environmental hygiene? Yes[ ] No [ ]

15. How would you describe the rate of open defecation in this community? (a) Very high [ ] (b) High [ ] (c) Low (d) Very low

16. What do you think is responsible for open defecation? (a) Nonfunctional toilet facilities (b) Inadequate number of toilets (c) Poor conditions of toilets (d) Personal choice. (e) Others_____

17. What do you think is responsible for open defecation in Public Places? (a) No/non-functional toilet facilities (b) Inadequate numbers of public toilets (c) Poor conditions of public toilets (d) Long distance to public toilets.

18. Are you aware of the risk and health threat open defecation poses? (a) Yes (b) No

19. If yes, indicate the health and environmental threat you know open defecation poses below by ticking on the option (yes or no) that applies to the following.

		Yes	**No**
	Health Hazards	I'm Aware	I'm Not Aware
1	Water-borne disease (cholera)	**[ ]**	**[ ]**
2	Diarrhoea	**[ ]**	**[ ]**
3	Malnutrition in Children	**[ ]**	**[ ]**
4	Child stunting	**[ ]**	**[ ]**

Environmental Hazards

5	Contamination and pollution of water	[ ]	[ ]
6	Visual (eyesore) and olfactory (smell) pollution	[ ]	[ ]

SECTION C:

20. Which of the following do you think is the best way to curtail the problem of open defecation? (a) Provision of adequate toilet facilities for both public and private uses. (b) Sensitizing the public on why it is good to maintain good hygiene (c) Both A and B above.

21. Who do you think should be responsible for ensuring open defecation is eradicated? (a) Government intervention (b) Individual and corporate responsibility (c) All of the above

22. What is your suggestion on how to address open defecation? _____

_____

_____

APPENDIX 2

Nonparametric Correlation

Notes

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Comments		
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	Split File	<none>
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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.

Syntax		NONPAR CORR /VARIABLES=Rate_Of_Open_Defecation_In_This_Community Do_Open_Defecation_Poses_Water_Borne_Disease /PRINT=SPEARMAN TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.03
	Number of Cases Allowed	629145 cases[a]

a. Based on availability of workspace memory

Correlations

			How Would The Respondent Rate Of Open Defecation In This Community	Is The Respondent Aware That Open Defecation Poses Water Borne Desease
Spearman's rho	How Would The Respondent	Correlation Coefficient	1.000	-.100

	Rate Of Open Defecation In This Community	Sig. (2-tailed)	.	.064
		N	392	344
	Is The Respondent Aware That Open Defecation Poses Water Borne Desease	Correlation Coefficient	-.100	1.000
		Sig. (2-tailed)	.064	.
		N	344	346

T-TEST

/TESTVAL=0

/MISSING=ANALYSIS

/VARIABLES=Practice_Of_Open_Defecation Do_Open_Defecation_Poses_Risk_And_Health_Threat

/CRITERIA=CI(.95).

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Do Respondent Practice Open Defecation	397	1.84	.370	.019
Is The Respondent Aware Of The Risk And Health Threat Open Defecation Poses	393	1.12	.322	.016

One-Sample Test

	Test Value = 0				
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower
Do Respondent Practice Open Defecation	98.753	396	.000	1.836	1.80
Is The Respondent Aware Of The Risk And Health Threat Open Defecation Poses	68.796	392	.000	1.117	1.09

One-Sample Test

	Test Value = 0 95% Confidence Interval of the Difference Upper
Do Respondent Practice Open Defecation	1.87
Is The Respondent Aware Of The Risk And Health Threat Open Defecation Poses	1.15

CORRELATIONS

/VARIABLES=Rate_Of_Open_Defecation_In_This_Community

Do_Open_Defecation_Poses_Diarrhoea

/PRINT=TWOTAIL NOSIG

/MISSING=PAIRWISE.

Outcome of Correlations Analysis

Notes

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Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.

	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=Rate_Of_Open_Defecation_In_This_Community Do_Open_Defecation_Poses_Diarrhoea /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
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	Elapsed Time	00:00:00.35

Correlations

		How Would The Respondent Rate Of Open Defecation In This Community	Is The Respondent Aware That Open Defecation Poses Diarrhoea
How Would The Respondent Rate Of Open Defecation In This Community	Pearson Correlation	1	.013
	Sig. (2-tailed)		.810
	N	392	344
Is The Respondent Aware That Open Defecation Poses Diarrhoea	Pearson Correlation	.013	1
	Sig. (2-tailed)	.810	
	N	344	346