Global Journal of Arts Humanity and Social Sciences ISSN: 2583-2034

GSAR PUBLISHERS
GLOBAL SCIENTIFIC AND ACADEMIC RESEARCH

Glob. J.Arts.Humanit.Soc.Sci
ISSN: 2583-2034
Vol-2 Iss-12, page 918-928

OPEN DEFECATION IN NSUKKA LOCAL GOVERNMENT AREA OF ENUGU STATE, NIGERIA: SHIFTING THE DISCUSSION TOWARDS HEALTH AND SOCIO-ECONOMIC IMPLICATIONS

BY

[1]OBIANAGWA, Christopher Ewuzie, [2]IFEM, Louiemarie Adaeze, [3]UWAECHIA, Onyinye Gift, [4]BORLIN, Elooghene Martin, [5]EJIOFOR, Chukwuemeka Chinedu, [6]EREFOROKUMA, Orom Nte, & [7]ANENE, Johnson Izundu

[1,2,5,6]Department of Political Science, University of Nigeria, Nsukka
[4]Department of Social Work, University of Nigeria, Nsukka
[3,7]Department of Political Science, Hezekiah University Umudi, Imo State

Article History
Received: 25/08/2022
Accepted: 05/12/2022
Published: 18/12/2022

Corresponding author:

OBIANAGWA, Christopher Ewuzie

Abstract

The United Nations Human Settlements Programme (UN-Habitat) in Nigeria reports that about 80 million Nigerians are living in slums. This scourge has a concomitant effect on healthy living and environmental safety as these homeless people and those living in dilapidated neighborhoods lack access to adequate sanitary facilities. This makes improper waste disposal and open defecation (OD) inevitable. The paper therefore examines the health and socio-economic implications of OD in Nsukka LGA. The study relies on both qualitative and quantitative data generated from primary and secondary sources such as scholarly articles, official and media reports, interviews and questionnaires, etc.; and are analyzed descriptively. Our findings show that poverty, dearth of sanitary facilities in homes and public places, as well as poor attitude to hygiene account for spate of OD in Nsukka LGA; and recommend inter alia prompt government response towards providing adequate sanitary infrastructure especially in public places as a panacea to end OD and dangers associated with it in the local government.

Keywords: Nsukka, open defecation, waste disposal, sanitary facility, health, socio-economic.

INTRODUCTION

Nigeria is the most populous country in Africa boasting a humongous population of about 204 million people (World Population Review, 2019), with a population density of 217.55 persons per square kilometers and a total area of 923, 768 square kilometers (CIA World Factbook, 2018). Nigeria is a heterogeneous and multi-ethnic federation which consists of 36 federal states and a total of 774 local government areas with the Federal Capital Territory (FCT) located at Abuja. Nigeria is gifted with enormous human and natural resources and earns fortunes from crude oil exploration which accounts for over 80 percent of government revenue and export earnings; and ranked as the biggest economy in Africa (Bloomberg, 2019; Africa Check, 2018).

However, in spite of Nigeria's rich object of nature and a certain level of progress being made in socio-economic terms, its productive forces and human development indices are still very fragmented and generally weak. It is not surprising that Nigeria ranked 152 of 157 countries in the World Bank's 2018 Human Capital Index [HCI] (World Bank, 2019). Suffice to this developmental challenge, Nigeria is bedeviled by over-dependence on oil sector while other sectors of the economy remained underutilized; the nation's critical infrastructure are in their lowest ebb with ineffective institutions incapable of stimulating a turn-around.

Furthermore, inequality and poverty index has continued to rise geometrically as the gap between the rich and poor population is growing rapidly. In fact, Nigeria achieved an obnoxious feat in 2018 overtaking India as the "Poverty Capital" of the world with about 87 million people living in extreme poverty compared to

India's 73 million out of over 1 billion national population figures (World Poverty Clock, 2018). Since then, the situation has grown worse with abysmal rising indices of diseases, crimes, unemployment, low income, illiteracy, etc. These trajectories suggest that most Nigerians lack access to adequate social services and cannot benefit from inclusive development programmes.

In the last decade, the inability of the Nigerian state to prepare for the spontaneous demographic growth of the country has resulted in a state of "Malthusian Catastrophe" with attendant pressure on the existing social infrastructure. The World Bank 2016 report shows that greater proportion of Nigeria's population is increasingly becoming vulnerable with an estimated 108 million homeless people as a result of insufficient and unaffordable housing infrastructure (Aleke, 2018). Similarly, the United Nations Human Settlements Programme (UN-Habitat) in Nigeria revealed that about 80 million Nigerians are living in slums- "overcrowded settlements with impermanent structures, little or no access to water, inadequate sanitation, low drainage management system; and most houses without toilets". This scourge has a concomitant effect on healthy living and environmental safety as these homeless people, itinerary travelers, and those living in dilapidated neighborhoods lack access to adequate sanitary facilities. This makes improper waste disposal and open defecation (OD) inevitable. Meanwhile, World Health Organization [WHO] & UNICEF (2013) perceived human open defecation to occur when human faeces are disposed of in the fields, forests, bushes, and open bodies of water, beaches, and other open spaces. According to Ngwu (2017, p. 201)), open defecation is "an awful practice where people defecate in bushes, rivers and open spaces outside designated toilets".

Notwithstanding, poor sanitation and open defecation are a global scourge, and in 2017, about 2 billion people in the world were reported to lack access to basic sanitation facilities such as toilets or latrines, while 673 million of these still defecate in the open, for example in street gutters, behind bushes or into open bodies of water (WHO, 2019). Globally, majority of those without adequate access to sanitation are living in rural areas where 90 percent of all OD is taking place (WHO & UNICEF, 2013). In Nigeria, the menace of OD and reckless disposal of waste has become a persistent environmental concern. It is common to see people defecate anywhere without restraints, especially at nights and early morning in locations such as bushes, green areas, open fields, roads, bus stops, rail tracks, uncompleted buildings, waste bins, drains, market places, and school premises, among others. Since 2019, Nigerian became the leading country in the global OD Index, after overtaking India as world number one (UNICEF cited in Igbonaka, 2021). According to Akindayo (2019), the phenomenon of OD does not just occur in the rural areas of Nigeria but also in the cities, and among the educated class in public tertiary institutions, business, and residential areas.

Open defecation is a recurring factor in Nigeria's health sector challenges and has wide-ranging negative effects. It is a channel for worm infestations of water, food, and vegetables. According to UNICEF (2018), fecal contamination of the environment and poor hygiene practices remain a leading cause of child mortality, morbidity, under-nutrition and stunting, and can potentially have negative effects on cognitive development. It further stressed that poor sanitation can be a hindrance to education and economic opportunity, with women and girls often the most vulnerable groups. Studies have shown that fecal pollution spreads worms which can cause anemia in children. For instance, Mara & Evans (2011) argued that OD causes worm infestation, which is a catalyst in iron deficiency anemia in adolescent girls as well as young mothers. Ayadi & Rotowa (2020) also stressed that children are most vulnerable to the burden that accompanies worm infestation.

In a 2019 survey of Nigeria conducted by the Nigeria National Bureau of Statistics (NBS) in partnership with the African Development Bank (AfDB), the World Bank, and UNICEF, it was reported that inadequate access to quality water, sanitation, and hygiene (WASH) services contribute immensely to a range of negative health, socio-economic and environmental consequences such as OD. The survey further revealed that only 9 percent of Nigerians have access to WASH services, 44 percent use basic sanitation services, 16 percent of households have access to basic sanitation services, average of 9 liters per capita volume of water for the rural population, 14 percent of schools have access to basic water and sanitation services, 7 percent of health facilities have basic water and sanitation services, 14 percent of markets and motor parks have basic water and sanitation services, and 11 percent of households have at least one case of diarrhea in the past 6 weeks (NBS, 2019). Notably, wide disparities exist between the rural and urban dwellers; the rich and poor; and educated and non-educated respectively in terms of access to WASH services in Nigeria. Those living in rural areas are by far more disadvantaged- with 6 percent access than their urban counterparts- which recorded 15 percent in access to WASH facilities (NBS, 2019).

Recently, the Nigeria Federal Ministry of Water Resources and UNICEF reported that "one-third of the Nigerian population drinks contaminated water at home while 46 million people are still practicing OD. At least 167 million homes do not have access to hand-washing facilities which is worrisome in this era of the COVID-19 pandemic, with hand-washing being a critical infection prevention practice" (Drakopoulos, 2020). Also, Nigeria ranks among the world's top 10 on people defecating in the open per square kilometer (WaterAid, 2015).

Moreover, Nsukka Local Government Area (LGA) is the largest in Enugu state covering about 486.2 km² Area with a projected population of 417,700 people, and a population density of 859.1/km² (National Population Commission of Nigeria & National Bureau of Statistics, 2016). Noteworthily, Enugu state, being one of the five states in the Southeast- SE geopolitical zone of Nigeria is in a crisis of OD as not less than 40 percent of its citizens engage in indiscriminate disposal of human excreta (NBS, 2019). Though the menace of OD is relatively low in the SE geopolitical zone when compared to the rising statistics at some other sub-national levels, the incidence is a huge concern in Enugu State and Nsukka LGA in particular. Nsukka LGA which hosts Nigeria's foremost indigenous University- the University of Nigeria, Nsukka- is among the LGAs with ravaging incidents of OD. In a study of access to sanitation in some locations of Enugu

State, Umegbolu & Offor (2017) maintained that while access to basic sanitation has improved in the state from 22.5 percent in 2013 to 45 percent in 2014, the occurrence of OD is still high at about 55 percent. The rising profile of OD in Nsukka LGA especially in the rural communities is attributed to the perennial water scarcity and high poverty indices in the area.

Meanwhile, several efforts are being made by the Enugu state government in collaboration with local and international bodies to eradicate OD in the 17 LGAs of the state. On the frontline are the National Partnership for Expanded Water Supply, Sanitation and Hygiene (PEWASH) strategy, Nigeria Federal Ministry of Water Resources in conjunction with the European Union (EU), UKAID, and UNICEF, among other stakeholders across the length and breadth of Nigeria, designed National Roadmap on making Nigeria open defecation-free by 2025. The plan involves providing equitable access to water, sanitation, and hygiene services and strengthening tailored community approaches to total sanitation (Adepoju, 2019). The policy is phased for implementation at various states and local government levels and is in line with the UNICEF's 2030 project which "aims at ending OD by 2030" (UNICEF, 2018, p.1).

Regrettably, barely five years since the adoption of the 2016 National Roadmap in Enugu State, there are still high cases of OD in the state, especially at rural levels. The Enugu state government's plan to end OD by the end of 2025 is merely a paperwork considering the state government's focus largely on its Capital City while paying little attention to the LGAs where WASH services are inadequate and OD endemic. There appears to be lack of synergy between Enugu state government and Nsukka LGA in an effort to eradicate OD by the year 2025. As a consequence, Nsukka LGA is among the 760 LGAs in Nigeria where OD is still endemic or yet to be declared free (Adepoju, 2019). There is also inadequate data in literature about the state of WASH in Nsukka LGA or on the commitment of the local government authority to end OD in the area. Against this backdrop, this study examines the health and socio-economic impact of OD in Nsukka LGA of Enugu state.

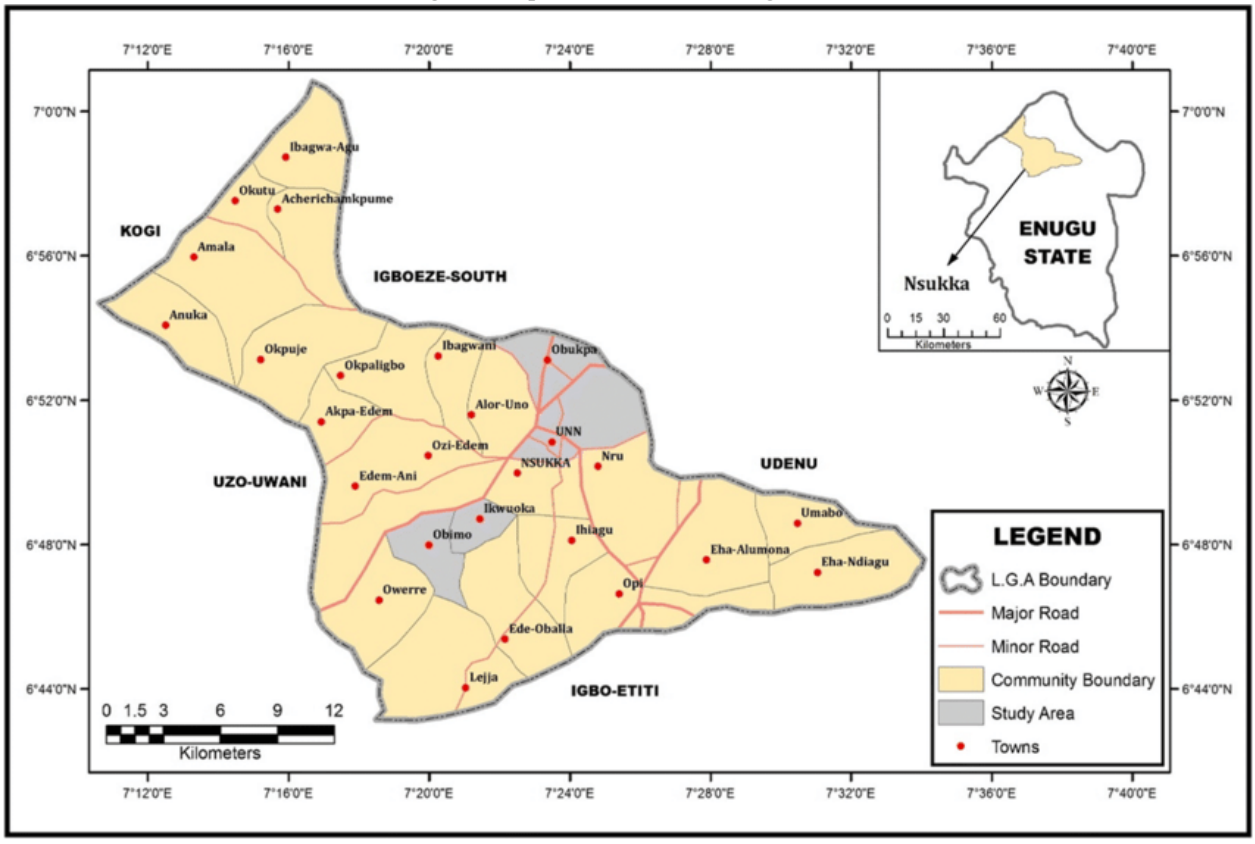
AIMS AND OBJECTIVES

The aim of the study is to assess the drivers of OD in the context of its effects on health and socio-economic well-being of people in Nsukka LGA of Enugu state. However, the objectives of the study are stated as follows:

i. To assess the availability of WASH in major markets, motor parks, schools, clinics, and rural suburbs in the local government (LG).
ii. To observe the WASH conditions of toilets and surroundings in the LG.
iii. To evaluate the level of satisfaction of users of public convenience in the LG.
iv. To examine the health and socio-economic costs of OD in the LG.

A BRIEF OVERVIEW OF NSUKKA LGA

Figure1 Map of Nsukka LGA, Enugu State



Source: Culled from Ohanu, Ekeh, Ohanu, Aguzie & Ivoke (2020).

Figure 1 above shows the Map of Nsukka LGA. Nsukka LGA has a total population of 309,633 persons from the 2006 Nigerian census (Nsukka Geographical Data, 2011). The population comprises of 149,241 males and 160,392 females. Nsukka LGA has an area of 1,810 km² and lies within latitudes 60451N and 70001N of the Equator and longitude 70151E and 70301E of the Greenwich meridian (Ofomata, 1995). Nsukka LGA is on a plateau which varies between 365-420 meters above mean sea level with isolated and outstanding peaks reaching over 545 meters. The LGA shares boundaries on the South with Igbo-Etiti LGA, on the West with Uzo-Uwani LGA, on the East with Udenu LGA, and on the North with Igboeze-North LGA, all in Enugu State. Nsukka LGA is made up of twenty-one autonomous communities, with Nsukka town being the only urban community. Most of the inhabitants of the area are farmers, traders, civil servants, and artisans (Adeniran, 2014). The choice of Nsukka LGA by the researchers is that the LGA is dominated by rural communities which is the major focus of the study.

Socio-economically, Nsukka, the headquarter of Nsukka LGA is a heterogeneous semi-urban community due to the presence of Nigeria's foremost indigenous university- University of Nigeria, Nsukka founded on October 1st, 1960 following the country's independence from Great Britain. Nsukka LGA is an agricultural-trade center (substantially subsistence) for the yams and cocoyam, cassava, maize, tomatoes, pepper and vegetables, cashew, groundnut, pigeon peas, palm oil, and kernels, among others produced by the local Igbo people. Other occupations include food processing, piggery, and poultry farming. In addition to farming, Nsukka men and women also engage in petty trading, dealing mainly on agricultural produce. Most of the markets in Nsukka LGA are rural markets which have trading links with surrounding urban markets in Enugu, Awka, Onitsha, Nnewi, Aba, Umuahia, Owerri, etc. for supply of foodstuffs produced in Nsukka. The people of Nsukka boast of a number of local food diets which are nutritious and attract huge patronage from the visitors. Nsukka is surrounded by hills, well-ventilated, especially at night, and dominated by the population of low-income people who are largely law-abiding. This accounts for peaceful atmosphere people enjoy in Nsukka.

BRIEF OVERVIEW OF OPEN DEFECATION IN NIGERIA

The existing literature show recurring phenomenon of OD which defaces the public space in Nigeria. This absurdity surprisingly is found everywhere in Nigeria including its smart cities and urban areas, and worse at semi-urban and rural locations. In the cities, it is common to see people defecate openly especially at night and early morning along the roads, inside the gutters, along railroad tracks and uncompleted buildings. People also defecate inside buckets or nylon bags and throw them into rivers or flood waters, drainage channels, dumpsites, bushes or even liter them on the roads. This practice is prevalent in the Nigerian cities especially around the markets and motor park areas either due to dearth of public toilets, overuse of available public conveniences or poor WASH conditions. According to UN (2008) and Makama (2015), public sanitary utilities are critical infrastructure essential for the well-being and dignity of city inhabitants. Primarily, public agencies are saddled with the responsibility of providing the public sanitary facilities such as toilets to allow people meet their WASH needs in public places such as the markets, schools, clinics, motor parks, etc. Examining the state of WASH in Nigeria, Obinna (2019) stressed that the widespread of open defecation in the major cities of Nigeria is due to abysmal state of sanitary facilities. She noted that open defecation in major expressways and motor parks is a commonplace in Nigeria "as tanker drivers, touts, motor park boys and traders, etc. leave much to be desired".

Meanwhile, Abuja, the Nigeria's capital territory is arguably the most modern city in Nigeria, yet public toilets are scantly in sights which made OD prevalent in the city. Inadequacy of public toilets compels people to resort to OD in many parts of Abuja, and so, human excreta have become usual sights under bridges, in uncompleted buildings, and by the roadsides even in the smartest parts of the city (Owoseye & Alawode, 2018). They observed that pedestrian pathways in some locations of Abuja such as Utako, Wuse market, Wuse Zone 3 where the Nigerian Customs Service is located, Gwagwalada, Maitama, Asokoro, etc. have become common places for OD, especially at night. Abdul, a taxi driver in the city of Abuja, who was interviewed by the Premium Times reporters noted that "people defecate in bushes or open spaces because the city does not have the facilities they can otherwise use, stressing that it was not easy to retain excreta in the body" (Owoseye & Alawode, 2018).

In spite of the aesthetic configuration of Abuja and other Nigerian cities, coupled with the good roads, bridges, exotic cars, and massive visitors being hosted on daily basis, dearth of public conveniences looms, and the few operated by individuals, especially at markets, plazas and motor parks hardly meet the minimum standards of WASH. In most cases, in order to access public toilets in most Nigerian modern cities, one may have to hurry into a bank hall, hotel or major eateries. Those who may not have any justifications using the above private facilities find the nearest corner, hide themselves, and evacuate their bowels. Taju Ayobami, a commercial driver in Abuja was interviewed by the Premium Times reporters on September 4, 2018. He stated that "the major reason he dressed decently was to enable him walk into any of the banks or eateries around Abuja to ease himself any time he was pressed". He further revealed that he could sometimes excrete into polythene bags and deposit them in the dumpsites especially when the banks and eateries were already closed. According to Taju cited in Owoseye & Alawode (2018):

> "When you work late and the banks and eateries have closed. Those late hours are not safe to be looking for where to excrete. What I do is to park in a safe place, go to the back seat and do it in nylon and throw it away. I always have water and nylon bags in my car just

> because of that. Most people realize excreting in public places is unsightly and harmful to health, but are forced to do it because of absence of public toilets in the city".

Additionally, though there are toilet facilities in most plazas, major gardens, motor parks, and markets in many Nigerian cities, but the dilemma is that the users far outweigh the available facilities, a condition which compels people to look for other means of meeting the urgency of excrement. According to WaterAid (2015), Nigeria is among the top 10 places in the world with longest queues for toilets. There are also situations where toilets are available especially in private facilities but with poor WASH thereby exposing users to the risks of contacting diseases. In confirmation of poor state of hygiene in Nigeria, NBS, African Development Bank- AfDB, World Bank & UNICEF (2019) reported that inadequate WASH services continue to afflict Nigeria, contributing a range of negative health, socio-economic and environmental consequences. The fear of contamination also makes people to resort to unhealthy methods of discharging faeces. In view of the poor WASH conditions in most public conveniences in Nigeria, a shop owner in Zone 2 Abuja disclosed to Premium Times (September 27, 2020) that:

> "There are toilets in most plazas but the people here are more than the facilities. Most times, water is not running and the place is not well kept. There is also the fear of contacting toilet diseases and other infections; that is why people prefer the bush. If there are public toilets you can pay a small sum like 50 naira to use, I am sure people will use them, knowing people are there to always keep them clean".

However, the trend of OD in other Nigerian cities including state capitals is not different from its recurrence at the Federal Capital Territory (FCT), Abuja. In the city of Lagos for instance, the state government has done remarkably well in curbing OD through the provision of mobile public toilet system as well other essential infrastructure, matched with huge presence of law enforcement agents to ensure stringent compliance of the general public in making Lagos state OD-free and clean environment. Yet, OD remains endemic in the state and posing a major constraint in transforming Lagos into a mega city. Many residents of Lagos and travelers (including homeless people and beggars) resort to OD either because the available facilities are overused- due to high population density or they could not afford as little as 50 naira per every excrement (due to high poverty profile of the state) or might endanger public health due to poor WASH. This explains why some locations in Lagos state (such as Ikorodu, Oshodi, Bariga, Akoka, Okokomaiko, Mushin, Iba, Iyana Ipaja, and Agege- Pen Cinema, among others) are reputed for defecating openly. Following poor state of sanitation in some areas in Lagos state, Awoyinfa (2012) likened public toilets in Lagos especially in high demographic areas "as places where people pay to get infected".

Poor sanitation such as OD are notably endemic in all the six geopolitical zones of Nigeria. In access to basic sanitation by geopolitical zones, Southeast tops the chart and manages to scale above 53 percent, followed by the Northwest, Northeast, South-South, Southwest, and Northcentral geopolitical zones with 51 percent, 48 percent, 46 percent, 36 percent, and 30 percent respectively (National Bureau of Statistics, 2019). In terms of OD indices by geopolitical zones, the NBS survey revealed that Northwest has the lowest incidents with 9 percent of its population engaging in the practice. This is followed by the South-South, Northeast, Southeast, Southwest, and Northcentral with 17 percent, 19 percent, 21 percent, 28 percent, and 51 percent of indulgence in OD. In the Southeast geopolitical zone, incidents of OD are at high levels in Ebonyi and Enugu states with 58 percent and 40 percent of their citizens practicing OD while the incident is relatively low in Abia (2 percent), Anambra (7 percent) and Imo (12 percent) states respectively (NBS, 2019). These variations in the Southeast could be attributed to disparities in access to WASH as well as enlightenment among diverse socio-economic classes in the zone.

In fact, there are stark disparities in access to basic water and sanitation services; basic sanitation and hygiene services; and basic water and hygiene services in the five (5) states of the Southeast. In terms of access to basic water and sanitation services, Imo state tops the chart in Southeast with 90 percent and 68 percent, followed by Anambra- 87 percent and 66 percent, Abia- 76 percent and 59 percent, Enugu- 72 percent and 38 percent, and Ebonyi- 52 percent and 14 percent (NBS, 2019). On access to basic hygiene services- with emphasis on availability of hand washing facilities using soap and water, Jigawa state takes the lead at national level with 59 percent while Ebonyi state is in the bottom low with 1 percent (NBS, 2019). This implies that more than half of the Jigawa state's population has access to basic hygiene services compared to 1 percent of Ebonyi state's population.

Consequently, the perennial water scarcity prevalent in most parts of Enugu state is one of the drivers of OD in the state. For instance, Agbo (2021) equated Enugu state to "a location where water is gold". Relatedly, poor sanitation and hygiene indices resulting mainly from water stress and poverty may have accounted for high-profile cases of OD in Ebonyi and Enugu states which recorded 58 percent and 40 percent of indulgence in OD in the NBS 2019 report, compared to Abia, Anambra, and Imo states- with 2 percent, 7 percent and 12 percent respectively where the indices are significantly low. However, the above statistics revealed troubling incidents of OD and poor WASH in Enugu and Ebonyi states. Besides, there is inadequate data on WASH and OD in the respective local governments in Enugu state. The study filled this research gap by investigating the prevalence of OD in Nsukka LGA focusing on its health and socio-economic implications.

METHODOLOGY

This study adopted a cross-sectional survey design because, it enabled the researcher to observe and collect information from cross sections of a population or phenomenon on a defined issue (Babbie, 2010). This facilitated the efforts of the researcher to ascertain a proportion of the respondents in Nsukka LGA that are

aware of OD. The sample size for the study was determined statistically using the Cochran (1963) formula, and a total of 522 respondents for questionnaire were distributed. The Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis and the IDI data analyzed using thematic analysis. This survey design was complemented with secondary data which enabled us to explore various dynamics of the study.

DISCUSSION OF RESULTS

Socio-demographic variables

Data in table 1 below shows some of the socio-demographic variables of respondents. The results revealed that majority of the respondents (59.8%) in the study were females. This could be attributed to the availability of the female folks at home as the male counterparts were said to be away from home during the day looking for greener pastures. The finding indicates that greater percentage of the respondents (43.3%) were between the age range of 18-45 years. The greater percentage of the respondents (42.0%) as shown in the table have acquired primary school education. Also, among the respondents, greater percentage (40.2%) were engaged in farming while 40.4% (greater percentage) of the respondents were below the average monthly minimum wage of thirty thousand naira (30,000 naira) obtainable in Nigeria.

Table 1. *Percentage distribution of respondents by* ***socio-demographic variables***

Variables	Frequency	Percentages (%)
Sex		
Males	312	40.2
Females	210	59.8
Total	**522**	**100**
Age		
18-45 years	226	43.3
46-59 years	149	28.5
60-75years	98	18.8
76 years/above	49	9.4
Total	**522**	**100**
Educational status		
No formal education	38	7.3
Primary education	219	42.0
Secondary education	198	37.9
Tertiary education	67	12.8
Total	**522**	**100**
Occupation status		
Student	149	28.5
Farmer	210	40.2
Business/Artisan	99	19.0
Civil/Public servant	43	8.3
Retired	21	4.0
Total	**522**	**100**
Average monthly income		
N0.00- N10,000	211	40.4
N11,000- N29,000	192	36.9
N30,000- N59,000	71	13.6
N60,000 and above	48	9.1
Total	**522**	**100**

Source: *Field survey, 2021*

The Availability of Sanitation Facilities

The study extended its investigation on the availability of sanitation facilities such as water and toilet facilities. The result in table 2 below shows that 34.7% of the respondents said that water facilities were available while majority of the respondents (65.3%)

responded in the contrary. In table 2 also, 25.3% of the respondents were of the opinion that toilet facilities were available while the majority representing 74.7% indicated otherwise. The finding reveals that there are inadequate sanitation facilities in the study area, hence poor the existence of poor state of WASH in Nsukka L.G.A of Enugu state. Thus, the finding relates to the reason why people resort to OD in our study area.

Table 2: *Percentage distribution of respondents on availability of sanitation facilities*

Sanitation facilities	Available (F/%)	Not available (F/%)	Total (F/%)
Water Facilities	181 (34.7)	341 (65.3)	522 (100)
Toilet Facilities	132 (25.3)	390 (74.7)	522 (100)

Source: *Field survey, 2021*

Open Defecation Practice in the Previous Two Months

The record of the prevalence of open defecation (OD) is high across the world. Thus, the study investigated on the prevalence of OD among the respondents and measured it by their sex and average monthly income within the previous two months. The Table 3 below shows the responses of the respondents on the practice of OD. The findings revealed that majority of the respondents (58.6%) had engaged in OD in the previous two months while 41.4% of the respondents had not engaged in OD in the previous two months. Thus, among those who have engaged in OD across their gender, majority of the respondents 53.9% (who are females) had engaged in OD. And across their average monthly income, majority of the respondents (89.9%) who were low-income earners had engaged in the previous two months.

Table 3: *Percentage distribution of respondents on OD practice by socio-demographic variables*

Socio-demographic variables	**OD practice**		
	Yes (F/%)	**Never (F/%)**	**Total (F/%)**
Sex			
Male	141(46.1)	69 (31.9)	210 (40.2)
Female	165 (53.9)	147(68.1)	312 (59.8)
Total (F/%)	**306 (58.6)**	**216 (41.4)**	**522 (100)**
Monthly income			
Low income	275(89.9)	128 (59.3)	**403 (77.2)**
High income	31 (10.1)	88 (40.7)	**119 (22.8)**
Total (F/%)	**306 (58.6)**	**216 (41.4)**	**522 (100)**

Source: *Field survey, 2021*

The Level of Satisfaction of Users of Public Convenience

The use of public convenience is another area of interest in this study. Therefore, the research examined the level of satisfaction of users of public convenience. The table 4 below indicates the responses of users of public convenience and their satisfaction. The table shows that 16.9% of the respondents were satisfied with the condition of public convenience while 83.1% of the respondents were not satisfied. Therefore, the majority of the respondents were not satisfied with the conditions of public convenience.

Table 4: *Percentage distribution of respondents on the satisfaction of public convenience conditions*

Satisfaction of public convenience conditions	Frequency	Percentage
Satisfied	88	16.9
Not satisfied	434	83.1
Total	**522**	**100**

Source: *Field survey, 2021*

The Health and Socio-Economic Costs of Open Defecation

Globally, the world populations have faced various consequences of OD at different levels. These include the health and socio-economic factors associated with OD which had cost implications. The table 4 below shows that 29.7% of respondents mentioned that OD has low health and socio-economic cost while 70.3% of respondents agreed that OD has high health and socio-economic cost. Thus, the finding of this study reveals that more than two-thirds of the respondents agreed that there is high health and socio-economic cost of OD.

Table 4: *Percentage distribution of respondents on health and socio-economic costs of OD*

Cost of OD	Frequency	Percentage
Low	155	29.7
High	367	70.3
Total	**522**	**100**

Source: *Field survey, 2021*

Thus, the above survey results are correlated with the extant reports on the state of WASH, OD, and their health and socio-

economic impact on Nigeria. Hence, there is an organic link between poor WASH and spate of OD especially in the rural locations. The World Bank 2021 WASH data sparingly confirmed the connection between poor WASH and OD in Nigeria. The report showed that about 29.7 percent of Nigerian rural population defecate openly (World Bank, 2021). This is corroborated by the UNICEF report which revealed that 25 percent of Nigerians or 46 million people defecate openly, with 33 million of them living in rural areas (Vanguard, November 20, 2021). Similarly, Obiezu (2019) stated that out of 25 percent or more than 47 million Nigerians lack access to toilet facilities, with majority in rural areas, where many are poor and cannot afford to install toilet facilities in their homes.

The existing literature have also demonstrated that inadequacy of public toilet facilities and overuse of available ones, fear of contacting toilet-related infections due to poor WASH, as well as poverty are drivers of OD in Nigeria. On this note, Oyinloye & Oluwadare (2015) observed that lack of improved public toilet facilities in most public places in Nigeria is responsible for OD and indiscriminate urination which are associated with offensive and stinking odor. Also, Abubakar (2017) on a study of access to WASH facilities in the Nigerian households observed that 31.5 percent of Nigerians do not have access to sanitation facilities. In a related study, Apata, Ogunjimi, Okanlawon, Bamigboye, Adara & Egbunonu (2019) examined the link between city pollution and sanitation in Nigeria, focusing on the Southwest geopolitical zone. The study observed that the existing sanitary infrastructures in Nigeria do not support its rapid population growth. Apata et al. (2019) concluded that about 67 percent of people in the study area (Southwest geopolitical zone) resort to OD due to lack of access to WASH facilities. The socioeconomic cost of poor sanitation is so huge. Accordingly, the Nigeria's Minister of Water Resources, Engr. Suleiman H. Adamu cited in Akindayo (2019) stated that "as per a World Bank report 2012, Nigeria loses 455 billion naira or US$3 billion annually due to poor sanitation, and this works out to US$20 per capita/year and constitutes 1.3 percent of Nigeria's GDP".

Furthermore, the above survey results on health and socio-economic effects of OD are also supported by the existing literature. For instance, a study by Coffey et al. (2014) and Ngwu (2017) revealed that the high rate in the practice of OD in rural communities will always have negative consequences affecting the human health as well as the environment alike. Ngwu (2017) argued that this barbaric practice kills babies, and impedes the physical and cognitive development of surviving children as well as has significant negative externalities, and releases germs into the environment which pose serious harm to both the rich and the poor in the society. Meanwhile, WHO (2019) considered the consequences of poor WASH and OD as follows:

> "Poor sanitation is linked to transmission of diseases such as cholera, diarrhea, dysentery, hepatitis A, typhoid and polio and exacerbates stunting; poor sanitation reduces human well-being, social and economic development due to impacts such as anxiety, risk of sexual assault, and lost educational opportunities; inadequate sanitation is estimated to cause 432,000 diarrhea deaths annually and is a major factor in several neglected tropical diseases, including intestinal worms, schistosomiasis, and trachoma; poor sanitation also contributes to malnutrition".

Additionally, some authors have considered the negative socio-economic effects of poor WASH and OD on human and environmental health to be enormous. A number of studies such as Bartram, Lewis, Lenton & Wright (2005), Montgomery & Elimelech (2007), Maria, Lane, Scott & Trouba (2010), Ezeh, Agho, Dibley, Hall & Page (2014), WHO (2016) and Abubakar (2017), among others have all acknowledged the negative health impact of poor WASH and OD which include exposure to acute excreta-related illness such as diarrhea, cholera, dysentery, typhoid, and hepatitis A, contamination of drinking water sources, and environmental degradation. According to them, OD is a consequence of inadequate sanitation.

It has also been established that human excreta when disposed openly can contaminate water, food, vegetables, and public spaces. A number of studies have linked fecal contamination to several diseases and deaths in Nigeria. For instance, as of 2012, "approximately 121,800 Nigerians, including 87,100 children under 5, die each year from diarrhea- nearly 90 percent of which is directly attributed to poor water, sanitation and hygiene (WASH)" (Water and Sanitation Program, 2012). The study further revealed that poor sanitation is a contributing factor- through its impact on malnutrition rates- to other leading causes of child mortality including malaria. It is on this note that WHO (2016) cited in Abubakar (2017, p. 2) stated that "whereas inadequate sanitation is estimated to cause 280,000 diarrheal deaths annually across the globe, about 2800 people die daily from illnesses related to inadequate sanitation, poor hygiene and unsafe water in Africa". In Nigeria, Ezeh, Agho, Dibley, Hall & Page (2014) observed that children under the age of 5 years are prone to 38 percent higher risk of dying from poor WASH. Studies have also shown that poor WASH and OD slow down cognitive development in children. Although slow cognitive development may not be a direct consequence, but early childhood diarrhea associated with poor WASH and OD contributes to undernutrition, stunting, and wasting which are associated with malnutrition and in turn with reduced long-term cognitive development (Water and Sanitation Programme, 2012).

Clearly, the economic burden of OD and poor sanitation falls heavily on the poorest population, majority of which dwelling in the rural areas. In 2012, Nigeria lost about US$13 million due to productivity losses arising from time lost in sicknesses associated with poor WASH and OD (Water and Sanitation Programme, 2012). In addition to time losses, economic costs are also associated with seeking for treatment of ailments borne from poor WASH and OD. This includes transportation cost, medical consultation cost, medication cost, and in some cases cost for hospital bed and feeding. This places heavy burden on the households, government, and labor market. Women who often

provide caregiving to children and elderly in many households appear to be the most vulnerable in terms of productivity losses associated with poor WASH and OD. For instance, women living in households without toilets or with toilets but poor WASH will spend additional time to accompany their children, sick and elderly relatives to safe places where they can defecate.

Moreover, people who defecate openly can be vulnerable to attacks from wild animals (such as snakes), as well as humans. Statistics have shown that women and girls are also vulnerable to rape when they defecate in open spaces. For instance, several rape cases associated with OD were reported in Jos, Plateau state of Nigeria in the year 2020 (Vanguard, July 3, 2020). Accordingly, Saleem, Burdett & Heaslip (2019) on a study of health and social impact of open defecation on women observed that increased risk of sexual exploitation, threat to women's privacy and dignity, and psychosocial stressors are linked to open defecation, which clearly present a serious situation of poor sanitation in rural communities of Lower-Middle Income Countries.

Again, the World Bank 2012 report showed that open defecation alone costs Nigeria over US$1bn per year. Considering the current ranking of Nigeria in the global open defecation chart, there is no doubt the cost economics of open defecation in the country may have increased geometrically. Poor WASH and open defecation deface the public spaces and undermine tourism potential, the cost of which in Nigeria is estimated to the tune of US9.4 million (Water and Sanitation Programme, 2012). It further revealed that fecal contamination of the environment is the root cause of an annual average of 5,400 cases of cholera affecting Nigeria, whereas the cost of the necessary WASH response is estimated to be US$3.5 million each year. Meanwhile, Akindayo (2019) assessed the cost-benefits of providing WASH and toilet facilities as means of ending open defecation in Nigeria. He noted that the market potential of sanitation in the country is huge. That is, if the 46 million people that defecate openly at present consider the use of toilet, the demand for material and labor, on a conservative estimate, will work out to NGN 1250bn or over US$8bn (Water and Sanitation Programme, 2012; Federal Ministry of Water Resources, 2016).

CONCLUSION AND RECOMMENDATIONS

From the survey results, the study found that many of the respondents were not satisfied with poor state of WASH facilities in many households and expressed their dissatisfaction about the current state of public conveniences in Nsukka LGA. Additionally, because greater number of people in Nsukka LGA are living within poverty line, our findings showed that they were unable to install toilet facilities in their homes, and in households where those facilities exist, unavailability of WASH facilities makes sanitation and hygiene impossible. Thus, with dearth of toilets/latrines in many households and public spaces, poor WASH records, and fear of contracting diseases from the available public lavatories, most people in our study area resort to open defecation in spite of demonstrable knowledge of its health and socio-economic consequences. Arising from the findings, the study recommends the following:

i. WASH facilities should be made an important government's priority. Without adequate water supply in Nsukka LGA, hygiene and sanitation an imagination. There is therefore the need for intensive collaboration among government at all levels and with international development partners such as UNICEF as well private sector to ensure that boreholes are drilled and sank especially in strategic areas across Nsukka LGA. This effort should be combined with provision of sufficient toilet facilities in the public places such as hospitals, schools, markets, motor parks, etc.

ii. Government, corporate bodies (such as banks and manufacturing companies), and wealthy individuals should be encouraged to donate WASH facilities and toilets/latrines where needed across Nsukka LGA, especially to poor households which cannot afford them.

iii. There is need for strong advocacy to sensitize the residence of Nsukka LGA on the prevalence and danger of poor sanitation and open defecation as well as measures to combat them. Hence, mass enlightenment of the people on the health and socio-economic implications of open defecation should be driven by the public and private media organizations.

iv. There is need for Nsukka LGA to make bylaws that should criminalize open defecation in public spaces. To this end, schools, marketplaces, hospitals, shopping complexes, restaurants and bars, financial institutions, private homes and public buildings, petrol stations, and recreation centers, among others must have toilets with running water installed in their facilities. The government should not approve any building or business site plan without adequate WASH facilities put in place.

v. There is need for government provision of sanitary officials who not engage on routine inspection of WASH and toilet facilities both in private homes and public spaces across Nsukka LGA but ensure the enforcement of hygiene laws in the local government.

REFERENCES

1. Abubakar, I.R. (2017). Access to Sanitation Facilities among Nigerian households: Determinants and sustainability implications. Sustainability, 9(547), 2-17.
2. Adepoju, P. (2019, August 13). Why Nigeria's campaign to end open defecation is failing. Retrieved from https://www.devex.com/news/why-nigeria-s-campaign-to-end-open-defecation-is-failing-95448
3. Africa Check (2018). Nigeria's economy: Services drive GDP, but oil still dominates exports. Retrieved from https://africacheck.org/reports/nigerias-economy-services-drive-gdp-but-oil-still-dominates-exports/

4. Agbo, D. (2021, January 16). Enugu: Where water is gold. Retrieved from https://www.vanguardngr.com/2021/01/enugu-where-water-is-gold/.
5. Akindayo, D. (2019). Tackling open defecation in Nigeria. https://www.ibanet.org/article/D4103B88-731B-4B2C-A24A-85F5AD005743
6. Akindayo, D. (2019). Tackling open defecation in Nigeria. Retrieved from https://www.ibanet.org/article/D4103B88-731B-4B2C-A24A-85F5AD005743
7. Apata, T. G., Ogunjimi, S. I., Okanlawon, M.M., Bamigboye, O., Adara, C. & Egbunonu, C. (2019). Growing-city pollution and sanitation: Causality and evidence from major cities of southwestern Nigeria. https://www.scielo.br/j/urbe/a/RnMpzjW3QCMvRGm4DDCxFKg/?lang=en&format=pdf
8. Awoyinfa, S. (2012, January 22). Lagos public toilets: Paying to get infected? The Sunday Punch. Retrieved from https://www.latestnigeriannews.com/news/145541/islamic-medical-group-tasks-nigerians-on-management-of-the-elderly.html
9. Ayadi, P. A. & Rotowa, O. O. (2020). Spatial heterogeneity in open defecation practice in residential zones of Akure, Nigeria. International Journal of Environmental Planning and Management, *6*(3), 81-93.
10. Bartram, J., Lewis, K., Lenton, R., & Wright, A. (2005). Focusing on improved water and sanitation for health. Lancet, 365, 810-812.
11. Bloomberg (2019). Nigeria tops South Africa as the continent's biggest economy. Retrieved from https://www.bloomberg.com/news/articles/2020-03-03/nigeria-now-tops-south-africa-as-the-continent-s-biggest-economy
12. Coffey, D., Gupta, A., Hathi, P., Khurana, N., Spears, D., Srivastav, N. & Vyas, S. (2014). Revealed preference for open defecation: Evidence from a New Survey in Rural North India. Economic & Political Weekly, 49(38), 43-55.
13. Drakopoulos, E. (2020). New survey reveals progress and gaps in Nigerians' access to water, sanitation, and hygiene services. A study conducted for UNICEF. Retrieved from https://www.unicef.org/nigeria/stories/new-survey-reveals-progress-and-gaps-nigerians-access-water-sanitation-and-hygiene-services.
14. Ezeh, O.K., Agho, K.E., Dibley, M.J., Hall, J. & Page, A.N. (2014). The impact of water and sanitation on childhood mortality in Nigeria: Evidence from demographic and health surveys, 2003-2013. Int. J. Environ. Res. Public Health, 11, 9256-9272.
15. Federal Ministry of Water Resources. (2016). Making Nigeria open defecation-free by 2025: A national roadmap. Retrieved from https://www.unicef.org/nigeria/media/1491/file/Nigeria-making-Nigeria-open-defecation-free-by-2025.pdf.pdf.
16. Federal Republic of Nigeria. (2019). Environmental and social management framework for a sustainable procurement, environmental and social standards enhancement project (SPESSE). Retrieved from https://documents1.worldbank.org/curated/en/447771568714926220/text/Environmental-and-Social-Management-Framework.txt.
17. Igbonaka, C.E. (2021, November 21). Nigeria ranks No. 1 in open defecation- UNICEF. Nigerian Tribune. https://tribuneonlineng.com/nigeria-now-ranks-no-1-in-open-defecation-unicef/
18. Makama, A. A. (2015). Appraisal of sanitary facilities in public areas of Garki District, Abuja (Master's Thesis, Ahmadu Bello University, Zaria).
19. Mara, D. & Evans, B. (2011). Sanitation and water supply in low-income countries. Frederiksberg: Ventus Publishing APS.
20. Mara, D., Lane, J., Scott, B. & Trouba, D. (2010). Sanitation and health. PLoS Med, 7(11), 1-6.
21. Montgomery, M.A. & Elimelech, M. (2007). Water and sanitation in developing countries: Including health in the equation. Environmental Science and Technology, 41, 17-24.
22. National Population Commission of Nigeria & National Bureau of Statistics. (2016). Nsukka local government area in Nigeria. https://citypopulation.de/php/nigeria-admin.php?adm2id=NGA014013
23. NBS, African Development Bank, World Bank & UNICEF. (2019). National outcome of routine mapping of water, sanitation, and hygiene in Nigeria: Summary of survey findings 2019. https://www.nigerianstat.gov.ng/pdfuploads/2019%20WASH%20NORM%20SURVEY%20FINDINGS%20-%20INFOGRAPHIC%20SUMMARY.pdf
24. News Agency of Nigeria. (2019, December 23). Enugu to end open defecation with public conveniences. Retrieved from https://www.vanguardngr.com/2019/12/enugu-to-end-open-defecation-with-public-conveniences/.
25. News Agency of Nigeria. (2019, October 28). Open defecation: Nigeria ranks No. 1 in the world- Minister. Retrieved from https://punchng.com/open-defecation-nigeria-ranks-no-1-in-the-world-minister/.
26. Ngwu, U.I. (2017). The practice of open defecation in rural communities in Nigeria: A call for social and behavior change communication intervention. International Journal of Communication Research, 7(3), 201-206.
27. Obiezu, T. (2019, November 19). Nigerian authorities launch campaign against open defecation. Voice of America. www.voanews.com/africa/nigerian-authorities-launch-campaign-against-open-defecation
28. Obinna, C. (2019, July 2). In Mile 2, Apapa, open defecation thrives. Retrieved from https://www.vanguardngr.com/2019/07/in-mile-2-apapa-open-defecation-thrives/

29. Ohanu, C.M., Ekeh, F.N., Ohanu, I.B., Aguzie, I.O. & Ivoke, N. (2020). Evaluation of some heavy metals and physicochemical properties of refuse dumpsites in Nsukka metropolis, Nigeria. https://www.researchgate.net/publication/342597581_Evaluation_of_some_heavy_metals_and_physicochemical_properties_of_public_refuse_dumpsites_in_Nsukka_metropolis_Nigeria
30. Owoyese, A. & Alawode, I. (2018, September 4). Special report: Why open defecation is prevalent across Nigeria. Retrieved from https://www.premiumtimesng.com/health/health-investigations/282346-special-report-why-open-defecation-is-prevalent-across-nigeria.html.
31. Oyinloye, M. A. & Oluwadare, O. I. (2015). Public convenience and sanitation challenges in developing nations: A focus on Agege, Lagos, Nigeria. International Journal of Research in Social Sciences, *5*(7), 7-20.
32. Premium Times. (2020, September 27). Only 38 out of Nigeria's 774 LGAs are open defecation free- Minister. Retrieved from https://www.premiumtimesng.com/health/health-interviews/428298-only-38-out-of-nigerias-774-lgas-are-open-defecation-free-minister.html
33. The World Bank (2019). The World Bank in Nigeria. Retrieved from https://www.worldbank.org/en/country/nigeria/overview
34. Umegbolu, E. I. & Offor, M. E. (2017). Access to sanitation in some rural communities of Enugu State, Southeast Nigeria: A survey study. International Journal of Health Sciences and Research, *7*(7), 60-66.
35. UN. (2008). Better sanitation is a matter of basic human dignity. Retrieved from https://www.un.org/apps/news/story.asp?NewsID=28981&Cr=Sanitation&Cr1
36. UNICEF. (2009). Equity in school water and sanitation: Overcoming exclusion and discrimination in South Asia. Retrieved from www.washresources.wordpress.com
37. UNICEF. (2018). UNICEF game plan to end open defecation. Retrieved from https://www.unicef.org/media/91316/file/Game-plan-to-end-open-defecation-2018.pdf
38. United Nations Human Settlements Programme (UN-Habitat) (nd.). Upgrading Slums in Abuja. Retrieved from https://sustainabledevelopment.un.org/partnership/partners/?id=8215
39. Vanguard. (2021, November 20). UNICEF raises concern over rate of open defecation in Nigeria. Vanguard Nigeria. https://www.vanguardngr.com/2021/11/unicef-raises-concern-over-rate-of-open-defecation-in-nigeria/
40. Water and Sanitation Programme. (2012). Economic impacts of poor sanitation in Africa. https://www.zaragoza.es/contenidos/medioambiente/onu/825-eng-v12.pdf
41. WaterAid. (2015). It is no joke: The state of the world's toilets 2015. https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/Its_No_Joke_2015_the_state_of_the_worlds_toilets.pdf
42. WHO & UNICEF. (2013). Progress on sanitation and drinking water: 2013 update. Retrieved from https://www.who.int/water_sanitation_health/publications/2013/jmp_fast_facts.pdf?ua=1#:~:text=Open%20defecation%20is%20when%20human,in%20particular%20from%20faecal%20matter.
43. WHO. (2019, June 14). Sanitation. Retrieved from https://www.who.int/news-room/fact-sheets/detail/sanitation.
44. World Bank. (2021). People practicing open defecation, rural (% of rural population). https://data.worldbank.org/indicator/SH.STA.ODFC.RU.ZS
45. World Health Organization. (2016). Sanitation: Fact Sheet. http://www.who.int/mediacentre/factsheets/fs392/en/