

# APPRAISAL OF ON-SITE SANITATION FACILITIES AND SOLID WASTE MANAGEMENT IN PUBLIC PLACES WITHIN AKURE MUNICIPALITY, NIGERIA

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**Abstract** — Public places within Nigeria are ever humming with tremendous activity and accordingly reflecting growth and development of the host cities. The ensuing channelization demands of these centres calls for apposite sanitation to enhancing efficient operation and utilization. This study was undertaken to assess the present status of onsite sanitation facilities in public places within Akure, to trace problems related to sanitation and solid waste management. Logical sampling methods were used to sample the users and passers-by of selected public places. Primary data were acquired from scrutinizing sanitation facilities, employing questionnaire, and interviewing the chief players- drivers and traders- in these centres. Qualitative and quantitative data obtained from both primary and secondary sources were employed for this study. Survey facts were analyzed using descriptive statistical method while Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) was further utilized in results analysis. The outcomes showed existing sanitary facilities are insufficient to match the populace, and a poor maintenance of these facilities credited to unavailability of dedicated management staff coupled with flawed maintenance and monitoring by local authorities. This is occasioned by lower than normal patronage. Further, the general experience of the respondent with regard to these facilities were rather unpleasant. Combating strategies to the established challenges in the selected centres are active governmental involvement in restructuring these places in conformity with standard requirements; community support programs, and a supervisory team routinely overseeing the reliability and development of sanitation facilities.

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**Keywords:** Onsite sanitation; Sanitation facilities; Water Supply; Waste management; Public places.

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## 1.0 INTRODUCTION

Inadequate sanitation around the world has led to increased occurrences of diseases and pollution of the environment and it is one of the major public health issues in Africa. Globally, about 2.4 billion people live without adequate sanitation as at 2015 [1, 2] and almost one billion practice open defecation [3, 4]. According to the World Health Organization (WHO) [5], diarrhoea which claims the life of about 760,000 children under the age of five annually is mostly caused by unsafe sanitation and drinking water. More so, Pruss-ustun [6] stated that poor sanitation contributes to the death of 1.5 million children yearly, which is the leading cause of death in the Sub-Saharan Africa [7] and averagely, fifty percent of the population in Sub-Saharan Africa does not utilize improved sanitation facilities [8]. This affirms the fact that water is life and a crucial component upon which human health totally depends for life's maintenance and healthy environment [9-11].

As a result, the United Nation (UN) has been committed to solving the problems related with inadequate sanitation by including it in the Millennium Development and the new Sustainable Goals. Although, the progress report given by the UN on Sustainable Development Goal 6 (ensure availability and sustainable management of water and sanitation) as at 2017, stated that 4.9 billion people (over two thirds of the world's population) now have access to improved sanitation facilities [12]. Nevertheless, the target of the sustainable development goal 6 must be achieved by 2030, that is "access to adequate and equitable sanitation for all and end to open defecation". This would only come to limelight by significant rising improvement in rural communities of central and southern Asia, Eastern and South-Eastern Asia and Sub-Saharan Africa, where access to adequate sanitation is still mild. With the completion of the MDG

in 2015, Nigeria reached the basic service target of 69 percent access to water supply and 29 percent coverage of sanitation access which is less than half the target set [13]. This indicates that the sanitation sector is in critical condition, and the country has experienced a decline to improve sanitation overall. In 1993, access to improved sanitation in both rural and urban areas was 35 percent and decreased in 2015 to 33 percent in urban areas and 25 percent in rural areas. Within urban areas, however, open defecation more than doubled from 7 percent within 1990 to 15 percent in 2015. More than 58 million people in urban areas in Nigeria currently live without basic sanitation, while 13.5 million people living in Nigerian towns and cities, though numerically speaking, publicly defecate [14]. Water supply which is a vital and inseparable part of sanitation is not left out. There is no major Nigerian city, including Abuja, the capital territory of Nigeria, with 100 per cent coverage of water supply [15]. It currently places Nigeria as the third largest in the world and the worst in relation to urban sanitation in sub-Saharan Africa.

In many developing and low-income countries, the construction of conventional sewerage system is not realistic because of the huge capital investment, high operation and maintenance cost, and several financial constraints [16, 17]. Consequently, the use of on-site sanitation technologies is often the most appropriate solution in most developing countries. Furthermore, Bancalari and Martinez [18], stated that policy solution to inadequate sanitation coverage have emphasized the construction of on-site facilities with the aim of reducing exposure to pathogens from open defecation (OD). More so, increase in population in most developing countries has led to the adoption of on-site sanitation system as compared to conventional sewerage [19]. OD determinants can be theoretically understood employing the FOAM framework; focus, opportunity, ability and motivation, originally developed to "help develop, monitor and evaluate behavior change programs for hand-washing" [20]. For instance, a person may be in close proximity to a public toilet (opportunity) and can know how it is being used (opportunity), however, does not see the risks of OD (motivation) [21]. Although categories of focus and motivation have been regarded as drivers to latrine adoption that hinder OD practice, categories of opportunity and ability are considered as constraints on latrine adoption that promote OD, and all four categories differ from one socioeconomic group to another [22].

On-site sanitation (OSS) has been embraced as a preferred sanitation method in cities experiencing rapid urbanization due to the high cost involved in off-site sanitation [23]. In most developing countries, the use of OSS is preponderate over the use of conventional sewerage sanitation. Furthermore, over 80 % of the houses in large cities and closely 100 % in towns in sub-Saharan Africa uses OSS facilities [24]. More so, according to Koottatep et al. [25], the use of OSS will serve the increasing population in developing countries for many years to come. However, epidemiological studies have shown a clear connection between exposure of faecal pathogens through improper on-site sanitation and outburst of diseases most especially diarrhoea [18, 26, 27].

A research work carried out by Bancalari and Martinez, [18], "on the exposure to sewage from OSS and child health" analyse the relationship between exposure to sewage from overflowed on-site infrastructure and the occurrence of diarrhoea in children. The result shows that the presence of sewage is associated with a relative increase of 22 % incidence of diarrhoea. The researcher also noted that this could be related to poorly constructed and maintained of on-site facilities and inadequate sewage management. According to Peal et al. [28], OSS facilities needs regular maintenance and removal of sludge. Therefore, the provision of OSS facilities in most developing countries as an alternative to the conventional sewerage system, needs proper maintenance of facilities to avoid outbreak of diseases and also to meet the 2030 target on sanitation of the new sustainable developmental goal. In their review, Ajibade et al. [29] appraised the issues, challenges and management of water supply and sanitation in Nigeria and its implications on the nation and also stated that the probable adverse impact of these decreasing water supply and sanitation situations on the health and throughput of Nigerians is apparent and bothersome. It is thus, imperative for Nigeria as a nation to revivify, upgrade and enlarge its water supply and sanitation amenities to meet up with MDGs and Vision 20: 2020 objectives for enhanced water supply and sanitation attention.

Although access to sanitation is increasing globally, but judging from the perspective of urgent political and economic importance, access to sanitation facilities specifically its appraisal certainly rates low amongst the government's primacies in Nigeria. However, there are few studies carried out on the national level in Nigeria, for example, the Joint Monitoring Program (JMP) reports by the Nigeria DHS (NDHS) and UNICEF/WHO, to evaluate sanitation facilities, and the influences that determine the categories of facilities households put into service. The JMP reported no more than an elaborate detail of similar rural/urban areas sanitation data, and the NDHS study assesses types of sanitation facilities by place of residence and regions with no respect to operation and maintenance. Besides, a recent review on urban sanitation in Nigeria thrusting on the previous, present and future status of access, policies and institutions stated vividly that keen attention has been directed solely on the access to facilities [13] at countryside/municipal and regional levels and throughout socio-economic divisions [30, 31] while other stages of the life cycle of urban sanitation are not often considered especially lack of studies on the evaluation of onsite sanitation facilities. More so, public spaces play a very vital role in the economic life of the people and strengthen the economic base of a town as they are the crucial ingredient of successful cities. Mara et al. [32] asserted that improved sanitation has enormous impacts not only on health but on socioeconomic development, especially in developing countries. Furthermore, solid waste management has been identified as a core environmental issue in Nigeria particularly in the public locations of a speedily increasing city of Akure [33, 34] with the problem of haphazard disposal of wastes at inappropriate sites without proper monitoring and assessment to prevent environmental pollution [35, 36]. Hence, it is of paramount importance to evaluate how public places are coordinated and managed to ensure that the human health and environment are not threatened. Thus, this research is aimed at assessing the on-site sanitation facilities in selected public places within Akure metropolis, Ondo State, Nigeria. This would be achieved by appraising the level of provision of sanitation facilities, identifying the intrinsic issues in the management of the facilities as well as resolving issues of waste management in the vicinity of these public places. We therefore have confidence that meaningful knowledge can be acquired in this study about how Grading of Recommendations, Assessment, Development and Evaluation (GRADE) can be employed to make deductions concerning the quality of evidence and strength of recommendations in a more systematic and transparent process, as well as how practitioners can cooperate to solve sanitation related problems in public facilities based on the obtained observational results.

## 2.0 MATERIALS AND METHODS

### 2.1 BRIEF DESCRIPTION OF THE STUDY AREA

The study area considered is Akure City, the capital of Ondo State and a medium-sized major urban centre in South West Nigeria [37] with potentials of increasing population growth and multiplicity of economic activities. Akure city occupies an area of 15,500 Km<sup>2</sup> and its geographical coordinates lies between latitudes 7°18'03"N - 7°18'06"N and Longitudes 5°08'02"E - 5°08'05"E [38]. The annual rainfall varies between 1500 mm and 3500 mm whereas the average annual temperature is 24°C - 32°C [39] with a mean annual relative humidity of over 75 percent [40]. The city has a population of 360,268 as at 2006 census and over the years it has been observed that the population growth of the city increases by 2 % yearly. Based on this prediction, the population has been predicted to have risen to 448,548 in the year 2017. Figure 1 gives a pictorial view of the map of Nigeria showing Ondo State. Six different public locations were selected for this study, in which, four were public markets (Oja-Oba Market (OJM), NEPA market (NM), Isinkan Market (ISM) and Isolo Market (IM)) and two were car parks (Benin-Owo Car Park (BOC) and Ultra-Modern Car Park (UMC)) as shown in Figure 2. These public places are selected due to their strategic locations with frequent daily influx of people, their propinquity and connection with main road networks, motor parks, markets constructed by the government.

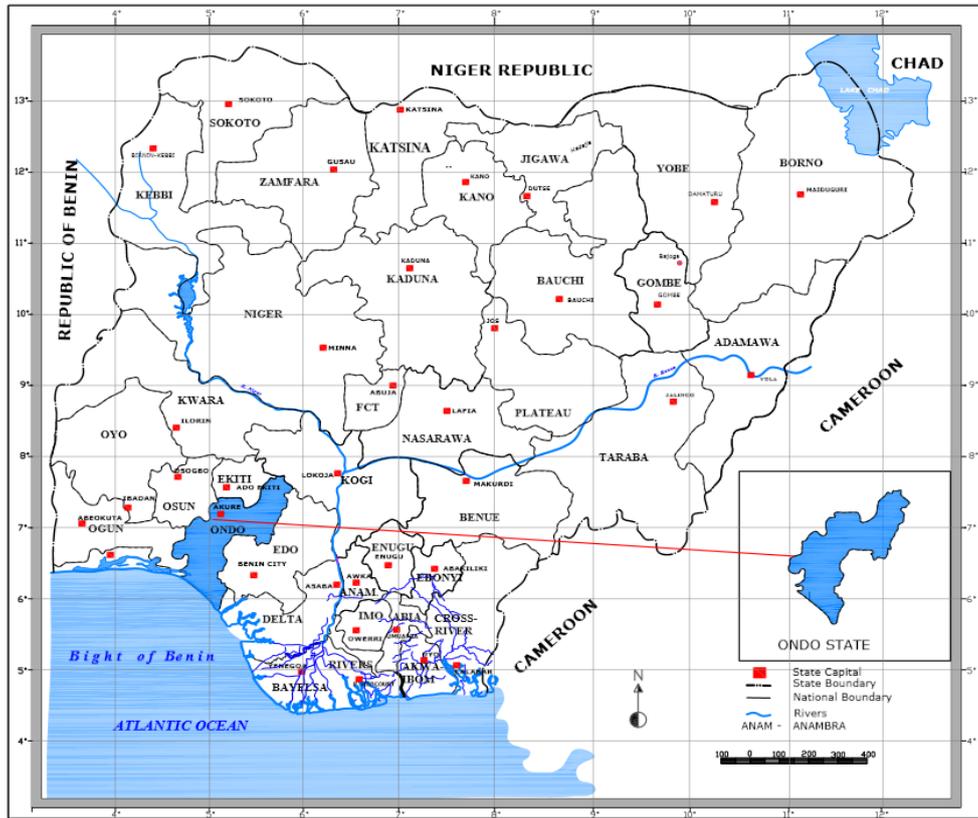


Figure 1. Map of Nigeria Showing Ondo State [41]

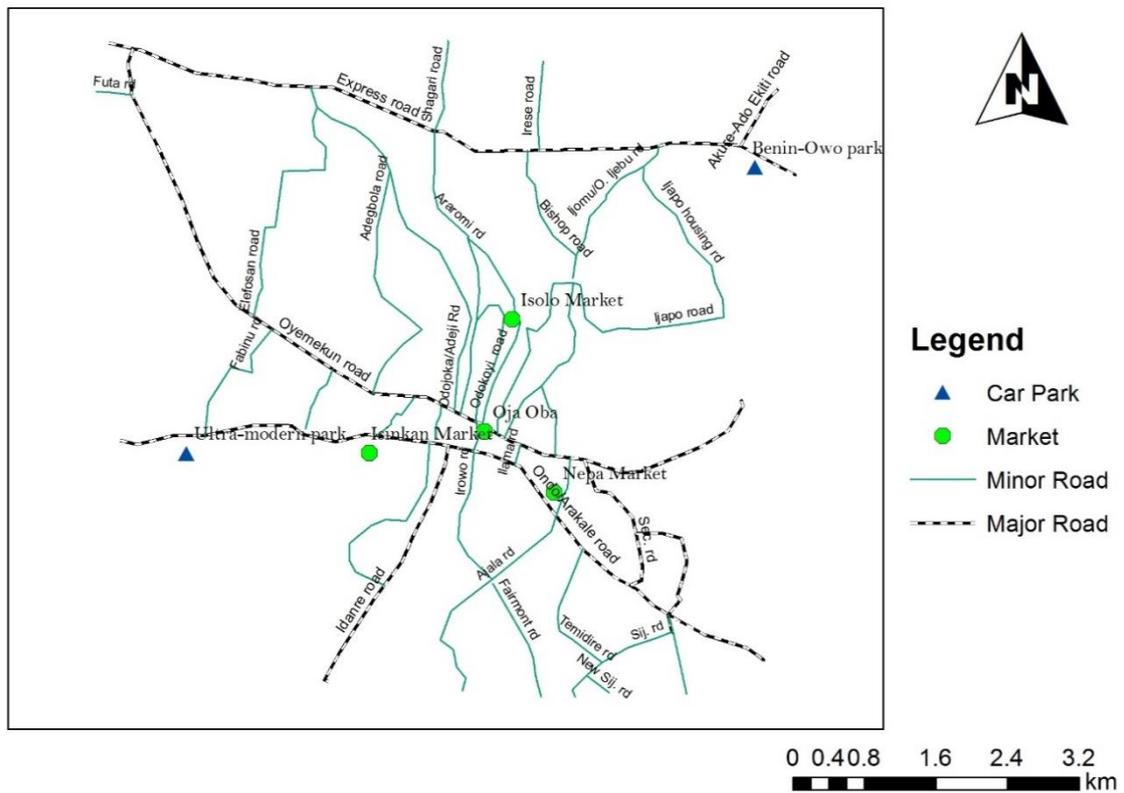


Figure 2. Study location of selected areas in Akure

## 2.2 DATA

This study was carried out based on qualitative and quantitative data, which was obtained from primary and secondary sources. The former was sourced through the use of questionnaire, personal observation and key informant interview method to obtain reliable information from the respondents. This followed Sclar et al. [42], that noted that in an observational study, assessment of sanitation could be measured as the presence or use of sanitation facilities. While the latter was sourced via extensive literature review [4, 42-44]. Further germane facts were also sourced from relevant books, internet search, papers prepared at workshops, seminars and conferences. The survey (as shown in the supplementary information) consists of the status, gender and age interval of the respondents, and more valuable information that was used to assess the onsite sanitation facilities in different selected location. The designed questionnaire was pretested to affirm the reliability and validity of our sample participants as well as the questions. This was carried out to assess the clarity of the questionnaire and reconstruct some of the statements observed during the pilot study. The detailed of the administered questionnaire and the response rate are as shown in Table 1.

Table 1: The response rate of administered questionnaires

<b>Class of respondent</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Status of respondent</b>		
Passer-by	186	41.30
Driver	80	17.80
Other mission	184	40.90
<b>Gender</b>		
Male	204	45.30
Female	246	54.70
<b>Age interval of respondent</b>		
18-25	133	29.60
26-35	89	19.80
36-45	147	32.70
Above 46	81	18

This survey study focuses on male and female adults who are the major users of the selected public places, for example, traders, buyers, passengers, passers-by and drivers etc. The estimated total population that was considered within the duration of this research was 4,491. The detailed estimation of the population for the six public places are summarized in Table S1 to S6. 10 % of these population was selected for the administration of structured questionnaires using cluster sampling method. A total of 450 respondents were randomly sampled at each selected location, details of these are shown in Table 2. Traders as part of respondent were selected on shop/stall on systematic random sampling basis such that every 10th shop/stall was selected in every selected market. Passers-by at the selected locations are not stationed at a place, compared to the traders and drivers, consequently the administration of the structured questionnaires to traders and drivers was carried out at ease. Nevertheless, efforts were made to sample passer-by using intercept sampling approach. Based on our preliminary inspection of the selected public locations, it was observed that there was indiscriminate disposal of solid wastes around where sanitation facilities were situated. Hence, the questionnaire was designed to include the management of solid waste.

There exists no established course of presenting field results, but that it should be characterized by clarity and brevity, to be thoroughly understood by a prospective user of this research work. While field observations have no specific methods of analyzing them, questionnaire surveys are analyzed using a variety of quantitative methods (descriptive and inferential statistics), and interviews are also analyzed using qualitative methods such as content analysis or grounded analysis. Besides, GRADE was also used to assess the final outcome of the quality of sanitation facilities available at selected locations. According to Guyatt et al. [43], the use of GRADE is suitable and helpful regardless of the quality of the evidence, be it high or very low. The researchers also stated that for an observational study, indirectness, inconsistency, bias of precision and risk of bias scores are considered when using GRADE approach. For

this research, the quality of evidence for each outcome was categorized into two groups namely low or very low based on observational studies.

Table 2: Cluster sampling procedure

Study areas	Estimated population	10 % sample
OJM	1698	170
NM	589	60
ISM	795	80
BOC	408	40
BOC	397	40
UMC	604	60
Total	4491	450

### 3.0 RESULTS AND DISCUSSION

#### 3.1 PHYSICAL OBSERVATION OF ON-SITE SANITATION

##### 3.1.1 WATER SUPPLY

Water supply systems are the major element of infrastructure needed to sustain working sanitation system [45] and the demand of water is expected to be doubled in the next twenty years. Presently, in most developing countries, the water supply system is inadequate to meet the present demand.

The study carried out at the selected location in Akure reveals that the water supply system was next to not being available. It was observed that the predominant water source was majorly borehole at the conception of each located site, however it was later switched to well water owing to non-functioning of the borehole. In addition, since the borehole stopped working at all the selected locations, the borehole has not been replaced or repaired. More so, the available well has not been managed properly as a result, users of the on-site toilet have to bring water from home or buy bottled water around the markets and car parks. Visual view of one of the wells and non-functioning borehole in one of the locations is shown in Figure 3.



Figure 3. Visual view of one of the wells and non-functioning borehole at Oja-Oba market

Over the years, the report of water supply and sanitation in Nigeria has not been a favourable one. For example, the United States Agency International Development (USAID) noted that WHO estimated the percentage of water supply in urban sanitation coverage to have dropped by 3 percent between the period of 1990 and 2008 [46]. However, policies have been structured out to investigate this problem, such as the National Water Supply and Sanitation Policy. Nevertheless, other factors that have contributed to this

problem till date includes feeble and inefficient organizations, unsustainable public sector spending, poor water quality, and conflicts over water use and management [46].

### 3.1.2. SANITATION FACILITIES

Adequate sanitation facilities provide key development intervention as having access to increase health, wellbeing and economic productivity. On the contrary, the result of this study reveals that the sanitation facilities provision is highly inadequate. For instance, OJM has two (2) cubicles provided for females and one (1) provided for males. Presently, out of the two provided for females, one of them has stopped functioning and the remaining one is underperforming owing to non-maintenance and inability to replace the non-functioning parts. Averagely, 1000 users were said to be using the facilities every day. This inadequacy sometimes results into long queues especially during raining season. The situation in OJM is similar to all the other studied locations (NM, ISM, BOC, IM, UMC). More so, cleaners are not equipped with proper working tools (soap, rags, scrub brushes, mops, etc) to do their jobs effectively without compromising their health status. Also, cleaners are not regularly monitored to ensure that they are performing their duties creditably.

Furthermore, all public toilets have poor lighting and aeration, degrading and exposed pipe networks, no colourful tiles and artworks to create ambiance. In addition, they have urinals of inadequate size, broken and uneven pavements, surface mounting of cables which are harmful to users. Afacan and Gurel [47], also reported similar situation on the study of public toilets in Turkey. Anyone using them is put at a significant risk because of non-hygienic conditions of the facilities which can eventually cause serious health issues. The users of these facilities often excrete around the holes not using the pedestal seat in the toilet leading to the poor hygienic condition of the facilities. Sometimes, it is difficult or not convenient to make use of the toilets as a result of scores of flies found within the premises of these facilities. Osumanu and Kosoe [48] also reported similar situation in Ghana, on the assessment of accessibility and utilisation of toilet facilities. All the facilities were dirty, giving out offensive odours, and required immediate attention by the operator/owner. Ineffective maintenance is pinpointed as one of the problems defying the usage of sanitation facilities in Akure.

According to Aremu [49], who carried out an assessment on sanitation facilities in primary schools within Ilorin, a State in Nigeria, noted that the state of sanitation facilities in most developing countries has raised alarming concerns. This is also similar to the result from the physical observation in this research. More so, from the assessment carried out by Aremu [49], it was reported that about 57 % of the primary schools have facilities that are in a very bad condition and needs urgent attention while about 12 % have no sanitation facilities. In 2015, WHO gave an estimate that about 100 million of 170 million Nigerians still lack basic sanitation facilities, thus the country did not meet the Millennium Development Goals (MDGs) target of 63 % coverage of access to sanitation facilities as at 2015 [1]. Likewise, the possibility of achieving these goals (now SDGs) in Nigeria by the year 2030 is likely slim, because a report by Alagidede and Alagidede [50] shows that the percentage of improved sanitation facilities in Nigeria dropped between the period of 2000 and 2014 from 34 % to 27 % respectively. Additionally, this current research is not showing any improvement either.

### 3.1.3. SOLID WASTE MANAGEMENT

The problem of solid waste management is one of the most important challenges to the government of most developing countries [51]. The observation on solid waste management during this research reveals that the physical environment of all the selected locations were polluted with solid waste. Although, each of these locations has waste receptacles, nevertheless the volume of waste generated at each location are often more than the available receptacles. Bulk of these problems are attributed to the State Government because the refuse vans provided only comes around to evacuate the waste once in one or two weeks, leading to the building up of wastes at each location. As a result, people dump their waste on the ground or in the drains very close to receptacles, as shown in Figure 4.



Figure 4. The condition of waste management at UMC

Increasing population, rapid urbanization, and the rise in the standard of living in developing countries have greatly accelerated the rate, amount and quality of the municipal solid waste generation [51]. According to Tukahirwa et al. [52], sanitation and solid waste management system has received significant attention in the last years through the united nation MDGs in developing countries and notable improvements in these systems needed to be seen if the goals must be achieved in African countries. Consequently, meeting the Sustainable Development Goal for waste management in ten years' time will have need of substantial economic resources, sustainable technological solutions and courageous political will as highlighted by Moe and Rheingans [53]. The government must not simply provide better-quality waste management system to those who presently require these basic services, but also to make sure that these facilities offer sustainable and correct service for public health and development.

#### 3.1.4. DRAINAGE SYSTEM

Pertaining to the drainage systems, this study reveals that the drains in some of the selected locations were not properly constructed, more so, because the users around these locations (OJB and ISM) dispose their solid wastes in the drainage system leading to its blockage. In addition, there were insufficient drainage system, while the existing drains were shabbily maintained, which has led to erosion during rainfalls. However, the drainage systems at other locations (NM, BOC, IM UMC) were properly constructed as they were made of cast concrete covered drain and functioning properly. Uncontrolled disposal of waste inside the drain was prevented as the covered cannot be easily removed. Generally, areas where sanitation and drainage are below standard, water flows on the ground during heavy rainfall, transports contaminants and pollute water sources. This crucially play a part in the spread of diseases such as cholera, diarrhea and typhoid and may amplify the probability of being infected with worm infections from soil polluted by human faeces. Flooding on its own may dislodge people and lead to additional health issues [54].

#### 3.1.5. GRADING OF ALL LOCATIONS

GRADE presents an understandable and well-thought-out process for developing and highlighting summaries of proof, including its quality, for recommendations in health care [43]. This rating was also used by [42], in evaluating the effects of sanitation on indicators of contamination along the pathways of transmission. The GRADE scores (low and very low) at each study sites indicate the quality of evidence. The grading scores is low if the observed situation is serious or very serious when it is very low (which implies that we have very little or no confidence at the condition of the observed facilities and way of management). Table 3 summarizes the observational result at each location for on-site sanitation.

Table 3. Summary of the observational result at each location for on-site sanitation

Study areas	Water supply	Sanitation facilities	Waste management	Drainage system
OJM	Very low	Very low	Very low	Very low
NM	Very low	Very low	Very low	Low
ISM	Very low	Very low	Very low	Very low
IM	Very low	Very low	Very low	Low
UMC	Very low	Very low	Very low	Low

### 3.2. NECESSITY AND AVAILABILITY OF SANITATION FACILITIES

From this questionnaire, Table 4 illustrates that 98.50% of the respondents considered it necessary and important that sanitation facilities are available, while 0.20% of the respondent is of the opinion that sanitation facilities are not necessary. Consequently, respondents were aware of the impacts of poor sanitation services. In addition, despite the fact that the availability of sanitation facilities is recognised by 65% of the respondents and 34.90% are not aware, majority of the respondents still consider the necessity of sanitation facilities.

Table 4. Necessity and availability of sanitation facilities

Response	Frequency	
	Necessity of sanitation facilities (%)	Availability of Sanitation Facilities (%)
No	1 (0.20%)	157 (34.90%)
Yes	448 (98.50%)	293 (65.10%)
Indifferent	6 (1.30%)	

In case of the usage of toilet, Figure 5 indicates the response of 34.90 % of respondent that are not aware of the availability of sanitation facilities, where 33 respondents (21.02 % (157); (7.30 % (450)) go to nearby friends or family's house, 63 respondents (40.14 % (157)); 14 % (450)) would have to return home without completing their assignment, 50 respondents (31.85 % (157); 11.10 % (450)) manage the inconveniencies until they finish the assignments, 10 respondents (6.37 % (157); 2.20 % (450)) go home with the waste and 1 respondent (0.64 % (157); 0.25 % (450)) prefer carelessly dispose of the defecation.

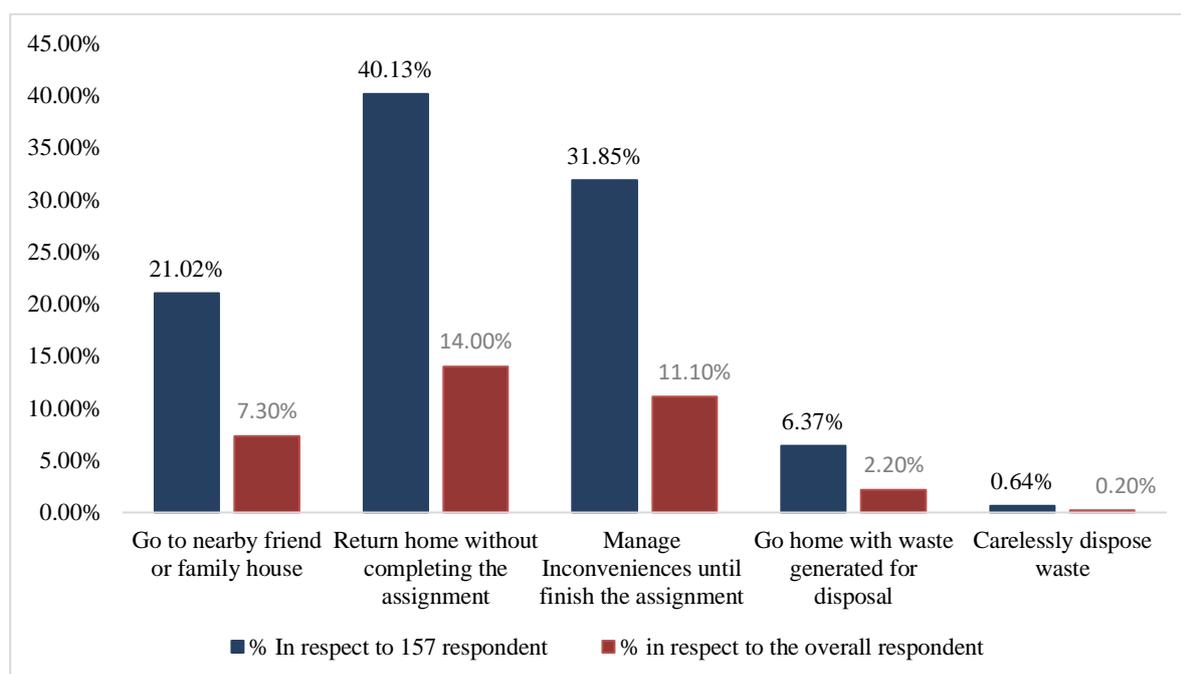


Figure 5. Response of individuals that are not aware of the available sanitation facilities when there is a need to use the toilet

Table 5 represents the usage frequency of the available facilities where 19.80 % of the respondent use sanitation facilities regularly, 44 % of the respondent use sanitation facilities occasionally, 0.90 % of the respondent have never used sanitation facilities and 35.30 % of the respondents are indifferent.

Table 5. Frequent usage of the available facilities

How often respondent use sanitation facilities	Frequency	Percentage (%)	Valid Percentage (%)
Regularly	89	19.80	30.60
Occasionally	189	44.00	68.00
Never	4	0.90	1.40
Indifferent	156	35.30	

Figure 6 depicts that 3.30 % of the respondents chose highly satisfactory, 12.70 % of the respondent chose satisfactory, 12.70 % of the respondent are neutral, 8.90 % of the respondent chose unsatisfactory, 27.30 % of the respondent chose highly unsatisfactory, while 35.10 % of the respondents chose no option (indifferent) based on their satisfaction with the available facilities.

Sanitation is a basic necessity for the environment that cannot be overemphasized, as it can be linked to good health and economic condition, which is presently prioritized as the most important need in the 21<sup>st</sup> century globally [55]. However, this has not been achieved in most developing countries, as it is revealed in this present research and summarized in Figure 6. Corresponding to this was noted by Alam and Mondal [55], that only 57.7% of the people in the urban of Bangladesh have access to sanitation facilities. In addition, Abubakar [30], reveals that two-third of Nigerians still use unimproved sanitation facilities which has led to sanitation crisis in the country. Although, Non-Government Organization are working with the Government to tackle this problem in order to meet the SDGs, nevertheless, serious monitoring structure must be put in place in all States and Local Government of the country. It is strongly recommended that the government should provide each public location with sanitation staffs to take proper care of existing and proposed facilities. Doing this, in essence also provide employment opportunities. Moreover, the Government and local authorities, in cooperation, initiate best practice assistance on a standard method to public toilet display signs for universal recognition. The stakeholders in the public places have a duty to collaborate with the local authorities of their area for efficient management and monitoring practice and exercising legislative powers to prevent anti-social behavior. This would halt the deterioration, consequently enhancing the hygienic state of the existing sanitation facilities and their sustainability. Provided that these recommended suggestions of this research work are employed, the public places in Akure and other developing cities would go through a new development as against the present experience in terms of managing, and organizing the physical settings of the public places' environs to create sustainable society and probably meet the SDGs.

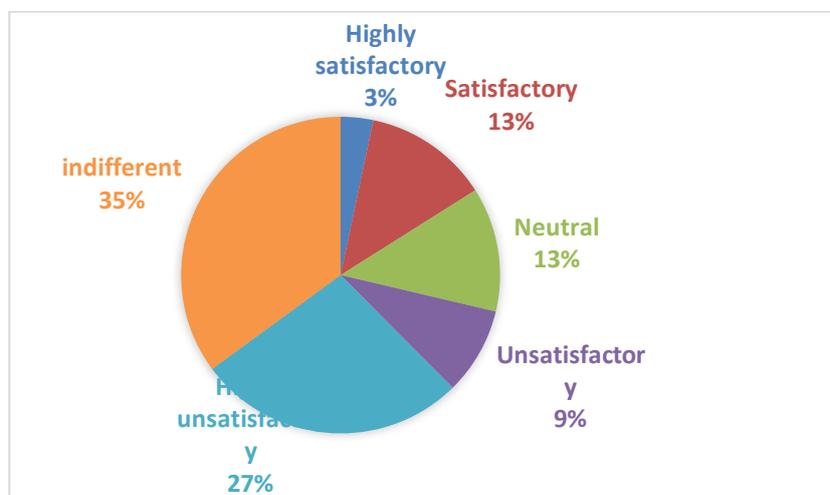


Figure 6. Percentage for the overall rating of sanitation facilities

Table 6 revealed that out of the total respondents, 9.10 % chose No, 55.10 % chose yes and 33.8 % of the respondents are indifferent for the payment for sanitary facilities. In regards to the amount the respondents are willing to pay, higher percentage of the total respondents are willing to pay ₦20 per use, ₦10 per use and ₦50 per month for toilet usage, for urinary usage and solid waste disposal usage respectively. In addition, in the aspect of willingness to pay for better sanitation services with respect to periodic payment, 24 %, 2.9 %, and 13.10 % of the respondents who responded are enthusiastic to pay daily, weekly, and occasionally correspondingly whereas 0.40 % of the respondents who gave response are not eager to pay, and 59.60 % of the respondents show indifference in their response to pay for better sanitation services.

Table 6. Payment per usage for sanitary facilities

Payment category	Response category/slated amount	Frequency	Percentage (%)	
<b>A</b> Pay for sanitary facilities	No	41	9.10	
	Yes	248	55.10	
	Indifferent	161	33.80	
	1. Amount paid for toilet	₦15	6	1.30
		₦20	77	17.10
		₦30	5	1.10
		₦50	187	41.60
		Indifferent	175	38.90
	2. Amount paid for urinal	₦10	74	16.40
		₦15	11	2.40
		₦20	177	39.30
		₦5	2	0.40
		Indifferent	186	41.30
	3. Amount paid for solid waste disposal	₦20	2	0.40
		₦50	7	1.60
		₦100	52	11.60
		₦200	5	1.10
₦300		5	1.10	
Indifferent		379	84.20	
<b>B</b> Is amount charged affordable?	No	149	33.10	
	Yes	126	28.00	
	Indifferent	175	38.90	
	1. For toilet	₦10	5	1.10
		₦20	97	21.60
		₦30	10	2.20
		Indifferent	338	75.10
	2. For urinal	₦5	5	1.10
		₦10	41	9.10
		₦15	21	4.70
		₦20	39	8.70
		Indifferent	344	76.40
	3. For solid waste disposal	₦50	11	2.40
		₦300	5	1.10
		Indifferent	434	96.40
<b>C</b> Willingness to pay for better sanitation services	Daily	108	24	
	Weekly	13	2.90	
	Occasionally	59	13.10	
	Never	2	0.40	
	Indifferent	268	59.60	

## 4.0 CONCLUSION

Inadequate sanitation in urban cities is a menace to the environment. Here, in this study, we have presented the current state of onsite sanitation facilities using the GRADE approach and this will offer a significant impact to decision making and planning for the betterment of public places in Akure, as well as for other cities in mature or emerging economies. Moreover, the study depicts that the public places are unable to satisfactorily meet the demand of the populace and thus it can be inferred that the public places (especially Isolo market, and Benin-Owo car park) in Akure are lacking in appropriate facilities and in need of overall renovation. In addition, overall experience of the larger percentage of the respondent were unsatisfactory with the state of the sanitation facilities due to poor maintenance. Also, the respondents (users) of these facilities do pay for their services but they were of the opinion that the amount should be subsidized. From the observational results, causes of failures of onsite facilities were identified and can thus serve as a basis of further improvements of the technology. This outcome will ultimately constitute a practical and quick tool for practitioners to ascertain the prevailing condition of sanitation facilities and distinctively distinguish those facilities which requires major transformation and modified design of parts or the whole public places to meet the required standard of a good sanitary spot and fulfil the needs of the populace.

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