THE IMPACT OF EXCRETA DISPOSAL INTO LAGOS LAGOON ON THE LAGOON ECOSYSTEM AT IDDO DISCHARGE POINT IN APAPA LOCAL GOVERNMENT AREA OF LAGOS STATE NIGERIA.

ABSTRACT

This study examined Urban dwellers did not realize that they are an inseparable part of the environment and that whatever affects the environment, affects them. By environment it means, the whole of human life; the physical, chemical, and biological setting of where and how people live. Thus, the home, air, water, food, neighbourhood, workplace, and even climate constitute an element of the human environment (Wright and Nebel).

Furthermore, the loss of loved ones is an inevitable part of life, and effective grief management is To provide a detail profile of excreta being discharge into the Lagos Lagoon at Iddo in terms of handling, the frequency and volume of the excreta. To examine the quality of water and fishes around the point of discharge through relevant tests. To identify the various impacts of excreta discharge into the lagoon at Iddo and OdoIyaAlaro. To appraise the performance of excreta waste handlers in terms of efficiency and attendant problems. To identify the different way of disposing excreta in Lagos metropolis. To assess the knowledge of people on excreta disposal and their health. To identify problem associate with excreta disposal into the lagoon at Iddo Jetty of Lagos State. To identify the various component of ecosystem in Lagos Lagoon and their contribution to man's health.and Arising from 1-8 above, evolve practicable and sustainable strategies for healthy excreta management in Lagos Metropolis.

The impact of excreta disposal into Lagos lagoon on the lagoon ecosystem at Iddo discharge point in Apapa Local Government area of lagos state Nigeria. *Statistical package for social science (SPSS), Simple percentage, bar charts and Either descriptive statistics was used in analyzing the returned questionnaires to show the respondents analysis.*

This chapter focused on the presentation and analysis of data on the topic of study. The level of success of any research study will depend on the technique adopted in so doing. According to Margaret Peil (1982), designing a research project involves the collection, organizing and analysis of data to fulfill the purpose of research and to provide the information which is sought.

Key words: **IMPACT, EXCRETA DISPOSAL, LAGOS LAGOON, ECOSYSTEM**

1. INTRODUCTION

Urban dwellers did not realize that they are an inseparable part of the environment and that whatever affects the environment, affects them. By environment it means, the whole of human life; the physical, chemical, and biological setting of where and how people live. Thus, the home, air, water, food, neighbourhood, workplace, and even climate constitute an element of the human environment (Wright and Nebel).

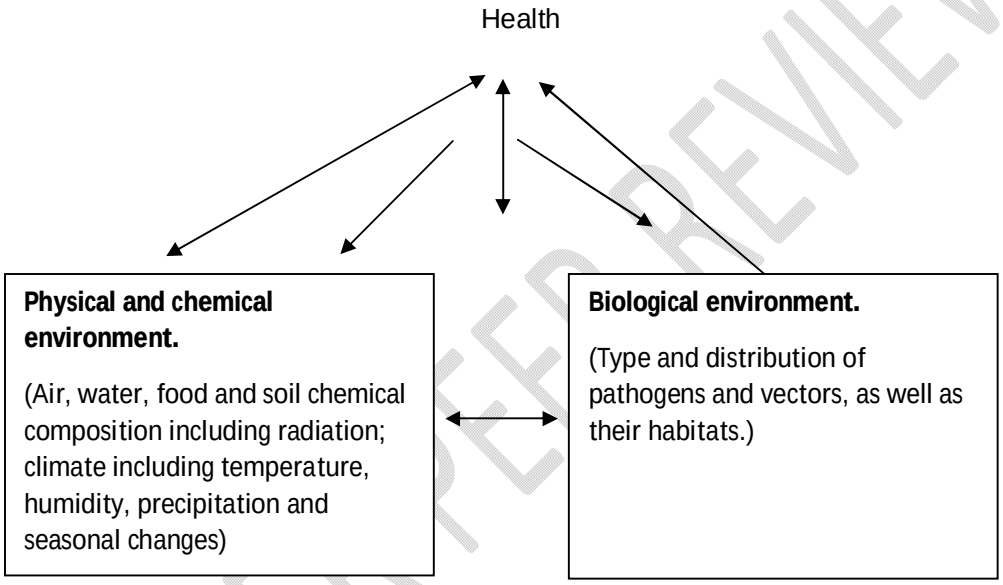
Human health depends on a society's capacity to manage the interactions between human activities, and the physical, chemical, and biological environments. This must be done in

ways that safeguard, and promote human health. At the same time protecting the integrity of the natural systems on which a healthy environment rests (Fig. 1).

Figures 1 Interaction between human activities and the physical, chemical and biological environments.

The scale and nature of human activities

(Agriculture, industrial and energy production, the use and management of water and wastes; urbanization; the distributions of income and assets within and between countries; the quality of health services; and the extent of protection of the living, working, and natural environment)



Source: WHO, the Planet, health.

The physical and biological environments include everything from the immediate home and work environments to regional, national, and global environments. It also includes continued functioning of the natural systems that receive the waste produced by human societies, and exposing people to pathogens and toxic substances, without compromising the well-being of the future generations.

Similarly, in Nigeria according to 1952 census there were 56 cities with a population of 20,000 and above. This number rose to 183cities in the 1963 census. In the 1991 census, the number was 359. The current estimates for 2006 put the number at 840 cities.

UN-Habitat estimated that “the population of Lagos will hit 25m by 2015”. “Lagos will then become third largest city in the world after Tokyo and Mumbai (Bombay). ‘In spite of the intractable population, and urbanization growth in Lagos State, 357,700 hectares of land

areas remained unchanged, out of these 60,839 hectares or 17% are of lagoons and waterway' (1Odumosu 1999). Managing wastes in Lagos metropolis, therefore, will remain chaotic, if appropriate mode of collection and disposal of excreta waste is not adopted.

The relevance of this review is seen in the rate at which wastes of all descriptions are likely to be generated, dumped into the lagoons, and other fragile part of the environment, vis-à-vis the phenomenal growth of city dwellers. The more populated the urban settlements, the higher the quantity of wastes emanating from their indispensable domestic, commercial and industrial chores.

The concern of this research is on excreta waste being discharged into the Lagos Lagoon in relation to the impact on lagoon ecosystem. According to *Longman dictionary of contemporary English*, excreta is the solid or liquid waste materials discharge from human and animals' bodies. Excreta waste contains enteric organisms such as *Klebsiella spp. Enterobacterial spp*. And *Escherichia coli* that are detrimental to the health of fauna and flora when injected into the system through food or water intake.

Lagoon is a stretch of salt water separated from the sea by a low sand bank or coral reef it contains brackish water. These types of waters are regarded as some of the most productive aquatic ecosystem in the world and are of great socio-economic importance (Kiener) cited in Laleye and Moreau.

2. METHODOLOGY

Instrumentation for data collection

The tools employed for data collection in this study are two the first instrument is the questionnaire, three categories of questionnaire were designed and distributed as stated above. Sixteen sterilized eve-table water 75cl containers were used to take water samples, and simultaneously kept in cooler containing ice-cubes, together with two unidentified fish bought from a fisherman.

Sample frame, sample size and sampling procedure

The entire stretches of the Lagos Lagoon constitute the sample frame. Iddo and Ikeja discharge points make up the sample size, Iddo discharge point served as experimental sample, while "OdoIyaAlaro" at Ikeja was the control sample. The littoral space adjoining Iddo discharge point was subdivided into six units based on geographical partition. Table

Table.1: Sample Frame and Sample Size

Description Respondents	Samples Frame	Sample Size	%
Petty trades on the carter bridge	36	22	60

People in the first motor park	63	38	60
People in the second motor park	53	32	60
People in the third motor park	57	34	60
Plank house at Iddo Jetty	31	19	60
Officers at Sewage Department Alausa, Ikeja	9	9	60
Excreta waste handlers	33	33	100
Total	315	207	100

Source: Author's field survey, 2007.

Sixty percent of people in each cluster were randomly selected and questionnaires were subsequently distributed to them (Table 2). Each officer heading the nine units that make-up the Sewage department in the Ministry of Environment at Alausa, and 33 excreta waste handlers registered to operate at Iddo jetty was also sampled.

Therefore, One thousand and sixty-five questionnaires (66% of 315) were administered. While One thousand questionnaires (97% of 1065) were retrieved (Table 2) and used for analysis.

Table 2: Analysis of number of questionnaire distribution and retrieved per category of respondent

Description respondents	**Number of questionnaire distributed**	**Number of questionnaire retrieved**	**Total retrieved per category of questionnaire**
Petty trades on the carter bridge	110	110	
People in the first motor park	190	185	
People in the second motor park	160	160	
People in the third motor park	170	170	
Plank house at Iddo Jetty	100	100	

Petty traders under the bridge opposite Iddo Jetty	95	90	815
Officers at Sewage Department Alausa, Ikeja	45	20	20
Excreta waste handlers	165	165	165
Total	1035	1000	1000

Methods of data collection

Both primary and secondary methods of data collection were employed for this study. For secondary data, relevant published, unpublished, journals, newspapers/magazines and internet literature was consulted. In addition, records relevant to this research were collected from Sewage Department in The Ministry of Environment at Alausa, Ikeja.

However, direct personal observation, communication with respondents, personal interview technique, and self questionnaire administrations were employed to elicit primary data. Water and fish samples were also taken for possible clinical analysis to establish the impacts of excreta clump into the lagoon on the lagoon ecosystem and the health of the public.

Methods of data analysis

The descriptive Statistical tools were employed to carry out rational statistical analysis of garnered socio-economic data. These include tables, percentages, pie, and bar charts. The second set of data derived from laboratory test was analyzed descriptively using World Health Organization and European Commission.

Building social capital with public-private partnerships

In the discourse of development theory/ much attention is paid to the growth of social capital within communities. Social capital development within communities involves a process in which community's increase participation in their own governance. Governance in the context of social capital can take many forms directly related to political office or indirectly related to community networks. Increased participation has the possibility to create better governance.

The synergistic effect between community involvement and good governance can have positive effects on other community structures.

Urban-rural metabolic rift

Marx theorizes that a metabolic rift occurs in a capitalistic society between town (urban centres) and country (rural periphery). The rift occurs as nutrients flow out of the country and into the towns for consumption. After the nutrients are consumed by the town, wastes are discarded the nutrients the capitalist dichotomy created between town and country disrupts nutrient cycling.

Integrated urban environment initiative household survey (IUEISL)

The household survey was developed to gather a better understanding of the Lagos community. General information about the community was acquired through discussions with officials from Mainland and Island municipality but the validity of this information was suspected to be under representative of the truth about the community. The survey can be broken down into three main inquiry objectives:

Peer-reviewed literature

Peer-reviewed literature and scientific articles were used to gather information on different aspects of this thesis. The literature is used to critique the causal relationships between actors in the EWM of Iddo Jetty and OdoIyaAlaro Layout. Potential program development of the IUEISL is contrasted to the prevalent literature to test the viability of the implemented and proposed actions.

Deep interview

One in-depth interview was conducted for this research. The interview was held with Alhaji Adewale – the Director of the NGO Waste Wise Trust in Iddo Jetty, Apapa. With 15 years of experience, Alhaji Adewale was chosen for his comprehensive knowledge in the field of EWM program development. The interview was begun on the general structure of Mr. Adewale's ideas on sustainable EWM and flowed through questions on the IUEISL.

Analytical framework

Causal Loop Diagram (CLD) analysis, a tool of systems analysis, illustrates the relationships between the actors in any given system. CLD analysis is beneficial in understanding and communicating complex systems involving variables of both qualitative and quantitative measurement. CLD analysis enabled the researcher to grasp and organize the multifarious causal aspects of EWM in a peripheral community of Iddo Jetty, Apapa.

Validity of the instrument

The designed questionnaire will be given to my colleagues in the same field of study for suggestion, and also to other tutor for eye see and move useful suggestions, and finally to any supervisor for advice and final approval.

Reliability of instrument

Reliability was defined by West fall and stanch as the characteristic of research methodology, which allows it to be repeated again by the same and by different researchers but with the same result. Poor questionnaire or samples which are always representation of the population is those factors which make it unlikely that repetition of the same project produce the same result.

3. RESULTS AND DISCUSSION

Introduction

The aquatic environment is that part of the earth covered with water and it is called the hydrosphere, air is the atmosphere while soil is the lithosphere. Hydrosphere, atmosphere and lithosphere comprise the biosphere e.g. an environment where living things are found microbes are minute living things that occur in all environments and are therefore ubiquitous.

However, the demographic data will first be dealt with, while that of data analysis and discussion of finding on questions relevant to the research hypothesis come up later.

List 1 : Return of questionnaire

	Total No. of Questionnaire	**Percentage**
No of questionnaires administered	**1065**	**100**
No of questionnaires returned	**1001**	**94**
No of questionnaires not returned	**64**	**6**

Source: Field Survey June 2012

Socio-economic and environmental characteristics of Iddo (Apapa L.G) and OdolyaAlaro (Ikeja L.G) jetties

The outcome of the study carried out in this study is presented and discussed in this section the analysis is subdivided into seven sections based on the categories of questionnaires distributed. Iddo jetty was been monitored for a period of 31days (12th March to 11th April 2012) and samples of water and fishes taken from both Iddo and OdolyaAlaro jetties; on Tuesday 8th and Friday 18th March, 2012.

Firstly, the socio-economic profiles of the people occupying Iddo jetty, and their view concerning condition of the lagoon water vis-à-vis the impact on the environment was discussed. Secondly, information relating to excrete waste handlers gathered during the study was analysed and discussed. Thirdly, the activities of officers in the Sewage Department, Ministry of Environment at Alausa in Ikeja was brought to the fore.

Profile of people working at Iddo Jetty

Local government area of residence of respondents

Depicts the Local Government of residence of the respondents around the discharge point at Iddo. This is an indication that the people spread across the entire State.

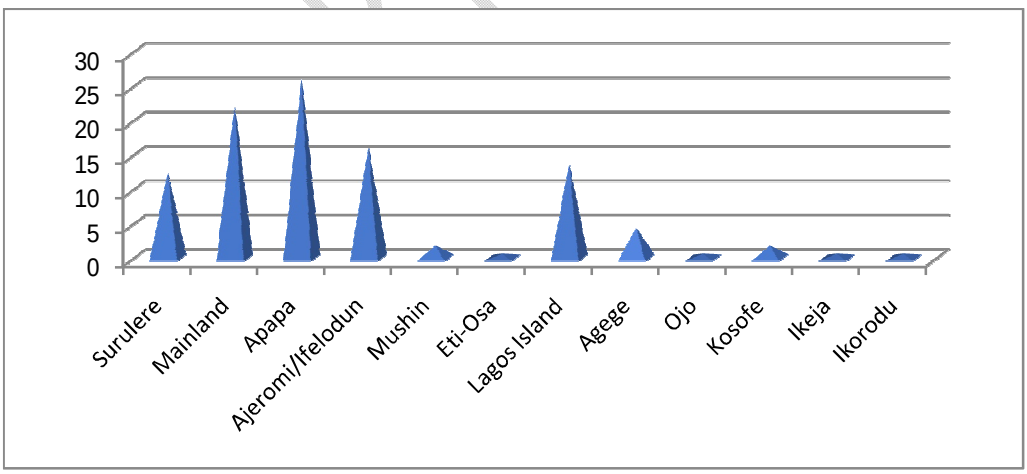
List 2 : Local government area of residence of people working at Iddo jetty

Local government	Frequency	Percentage
Surulere	20	12.3
Lagos Mainland	35	21.5
Apapa	43	26.4
Ajeromi/Ifelodun	26	16.0
Mushin	3	1.8
Eti-Osa	1	0.6
Lagos Island	22	13.5
Agege	7	4.3
Ojo	1	0.6
Kosofe	3	1.8
Ikeja	1	0.6
Ikorodu	1	0.6
Total	163	100.0

Source: Author's fieldwork June 2012

Therefore, an eventual outbreak of any infectious disease at the site of discharge meant the unfettered transmission into the nooks and crannies of the state. Only few of the people occupying the littoral space are residents living in 'overhung structures' erected on the bank of the lagoon. Majority of them commute from their various abodes located across the Lagos State on daily bases to Iddo for economic reasons, the people occupying the littoral space of Iddo jetty come mainly from the adjoining Local Government Areas.

Fig 2. Local government of residence of people working at Iddo jetty



Source: Author's Analyzes, June 2012

As revealed in Table 3, 26.4% of the respondents reside in Apapa Local Government, followed by 21.5% living in Mainland, 16% in Ajeromi/Ifelodun and 13.5% commuting from Lagos Island. Respondents residing in Surulere 12.3% are also significant. Figure 2 depicts the locations of the respondents' abodes clearly.

Sex of respondents

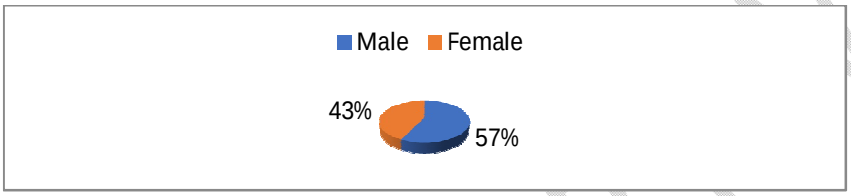
About 57% of the respondents are male (Table 3) 8.0% of which is drivers (Table 4) who engaged in inter-state transit. They might serve as vectors for faecal-oral diseases across the country; 43% of the respondents are female out of which 9.8% are food vendors (Table4), whose hygiene practices are questionable.

Table 3: Sex of the respondents

Sex	Frequency	Percentage
Male	93	57.0
Female	70	43.0
Total	163	100.0

Source: Author's fieldwork June 2012

Fig 3. Sex of the Respondents



Source: Author's Analyses, June 2012

The preparation of food for public consumption takes place on the bank of the polluted lagoon, very close to 'overhung toilets' on every business day. These food vendors also situated their cafeterias around the discharge point, about forty meters away.

Occupation of respondents

The major occupation going on around Iddo discharge point is trading. 69 (42.3%) of the people are traders who sell consumable goods. 22 (13.5%) involved in conveying people and goods within Lagos State and to other parts of the country. 12.3% are artisans, amongst who vulcanizes, repair vehicles, shoes, and wrist watches (Table 4) also, 12 (7.4%) engage in 1 occupation or the other, ranging from pay-phone call, vendor to touting. Only 10 (6.1%) of the respondents are fishermen. Perhaps, poor population of fish in the lagoon around Iddo is the cause of less concentration of fishermen at the jetty during one of the researcher's discussions with a fisherman, it was claimed that there has been a drastic reduction in the quantity of fishes being caught in the lagoon lately.

Table 4 : Occupation of respondents

Occupation	Frequency	Percentage
Trading	69	42.3
Food vending	16	9.8
Artisan	20	12.3
Commercial motorcycle rider	9	5.5

Lorry and bus drivers	**13**	**8.0**
Business	**12**	**7.4**
Medical	**5**	**3.1**
Security	**4**	**2.5**
Fishing	**10**	**6.1**
Civil servant	**2**	**1.2**
Force	**1**	**0.6**
Student	**1**	**0.6**
Teaching	**1**	**0.6**
Total	**163**	**100.0**

Source: Author's fieldwork June 2012

There are 5 (3.1%) respondents who claimed to be medical practitioners that sell medication to those who are sick; they also confirmed that faecal related infections are the most probable complaints of the people at Iddo jetty. To further affirm that Iddo jetty is a well established community, there was a teacher (0.6%) who tutor children and operate like a day-care center.

Besides, the heterogeneous occupation of the respondents also portends another danger for the spread of faecal-oral infections in the State. Traders, from whom remote and immediate people buy goods of trade, can pass faecal associated infections to unsuspecting buyers when goods exchange hands.

Location of toilets at Iddo Jetty

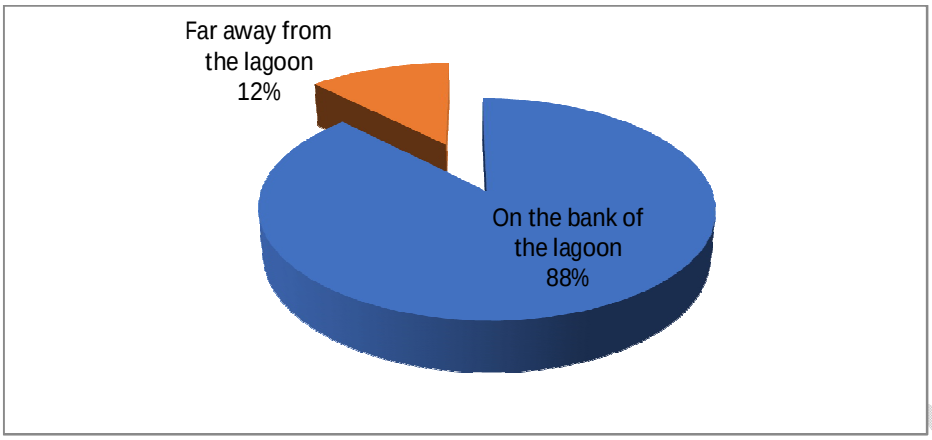
In addition to the raw faecal effluent being discharged into the Lagos lagoon at Iddo on daily bases, toilets made of planks or bricks are situated at the bank of the lagoon from where undiluted faeces are discharged into the Lagoon.

Table 5 : Location of Toilets around Iddo

Location	Frequency	Percentage
On the bank of the lagoon (below 10m)	**143**	**87.7**
Far away from the lagoon (above 120m)	**20**	**12.3**
Total	**163**	**100.0**

Source: Author's fieldwork June 2012

Fig 4 : Location of toilets around Iddo.



Source: Author's Analyzes, June 2012

Figure 3 conspicuously illustrates that the number of respondent who confirmed that the toilets are located at the bank of the lagoon outnumbered that of those who said that the location of the toilet is far away from the lagoon.

Table 6 : Charges per use of toilet at Iddo

Charges in naira	Frequency	Percentage
10.00	24	14.7
20.00	138	84.7
30.00	1	0.6
Total	163	100.0

Source: Author's fieldwork June 2012

Charges per use of toilet at Iddo Jetty

Table 5 shows that the user of these insanitary toilets located at the bank of the lagoon part with 10 to 20 naira before permission is granted to use any of the toilets. During the researcher's friendly investigation, it was discovered that the construction of the toilets was not authorized by any government agent but are erected and operated by individual who laid claim to the ownership of the bank of the lagoon.

Table 7 : Availability of water for anal cleaning in the toilets at Iddo

Response	Frequency	Percentage
Available	140	85.9
Not available	23	14.1
Total	163	100.0

Source: Author's fieldwork June 2012

However, with overt erratic supply of portable water in Lagos State, any time water is unavailable. The users of these toilets are exposed to infections of any types that are faeces related.

Table 8 : Materials used for anal cleaning when there is no water in the toilets

Materials	Frequency	Percentage
Water sachets	83	50.9
Tissue paper	57	35.0
Indifferent	23	14.1
Total	163	100.0

Source: Author's fieldwork June 2012

revealed that 50.9% of the respondents employ water sachets [pure water], 35.0% resorts to tissue paper for anal cleaning, while 14.1% remained indifferent to the question. Probably, their last resort is lagoon water or they do not clean at all after defecation this irrevocably placed them at high risk of contracting infections.

Nuisances created by discharging raw faecal matter into the lagoon

One of the nuisances engendered by indiscriminate discharge of faecal effluents into the lagoon is fly infestation according to 27.0% of the respondents (Table 9), 54.0% said that insanitary discharge of raw faecal matter make the lagoon be stinking. Although 19.0% of the respondents are indifferent to the question, it is obvious from other responses that discharging of untreated excreta into the lagoon engendered environmental unfriendly conditions.

Table 9: Nuisances perceived by respondents

Nature of nuisance	Frequency	Percentage
Fly Infestation	44	27.0
Odour	88	54.0
Indifferent	31	19.0
Total	163	100.0

Source: Author's fieldwork June 2012

Against the backdrop of insanitary practices of food vendors, operators of 'overhung toilets'and most significantly, excrete waste handlers. It is not hard for housefly to carry pathogenic organisms from infected water to the food prepared for public consumption and other consumable materials usually displayed for sale around the jetty.

Cases of ill health amongst the respondents.

It is not surprising that an intestinal disease that is induced by injecting faecal-oral. Pathogens have been reported among the respondents, considering the preceding revelations.

Table 10 : Reported Cases of Infection amongst the Respondents

Nature of disease	Frequency	Percentage

Dysentery	**39**	**23.9**
Cholera	**27**	**16.6**
Stomach-upset	**33**	**20.2**
Typhoid	**22**	**13.5**
Indifferent	**42**	**25.8**
Total	**163**	**100.0**

Source: Author's fieldwork June 2012

Reveals that 23.9% of the respondents confirmed to have suffered from dysentery; 16.6%, from cholera; 20.2% affirmed to have suffered from stomach-upset, while 13.5% confirm to have treated the typhoid. This is a vindication that the quality of the environment around Iddo is not completely healthy for human habitation, despite the fact that 25.8% of the respondents are indifferent, to the question posed.

The importance of lagoon water at Iddo Jetty

Water is paramount to man's survival as the biological systems of a human include 65 percent of water. Without water, human beings cannot survive beyond 9days.

Table 11 : The uses of lagoon water at Iddo

Uses	**Frequency**	**Percentage**
Drinking	**4**	**2.5**
Swimming	**30**	**18.4**
Fishing	**121**	**74.2**
Car wash	**3**	**1.8**
Washing (domestic)	**3**	**1.8**
Transport	**2**	**1.2**
Total	**163**	**100.0**

Source: Author's fieldwork June 2012

The people occupying the littoral space of Lagos lagoon at Iddo deal directly or indirectly with the water in the lagoon, and are also aware that the water stinks because of raw faeces being discharged into it. The perceived insanitary condition of the water prompted 74.2% of the respondents to say that the water is not good for any other human activity except fishing.

In Table 11, 18.4% of the respondents are using the water for swimming, 2.5% told the researcher that they consume. The water at the middle of the lagoon and not the one close to the discharge point, 3.6% of the respondents use the water for washing, while only 1.2% use the water to convey people and goods.

Condition of lagoon fish at Iddo

In Table 12, 23.3% of respondents confirmed that the fish in the lagoon around Iddo is not good for eating, while 21.5% said the consumption of the fish caught from the lagoon is

harmless to human systems. However, the difference is not significant because of 55.2% respondents who reacted indifferently to the question.

Table 12 : Perceived consumptive condition of fish by respondents

Condition of the fish	Frequency	Percentage
Great for Eating	35	21.5
Not Good for Eating	38	23.3
Indifferent	90	55.2
Total	163	100.0

Source: Author's fieldwork June 2012

But it is generally known that the fishes feed on raw faeces discharged into the lagoon, and it is also known that raw faeces contain enteric organisms that are detrimental to health if injected (see table 12). Therefore, the consumption of such fishes can cause disease in man.

Excreta disposal methods

It seems that the majority of the respondents are oblivious of the roles of sewage treatment plant in the management of excreta waste, or they do not know that such machine exists.

Table 13 : Suggested excreta disposal methods by respondents

Method	Frequency	Percentage
Septic tank with soak-away pit	46	28.2
Sewage treatment plant	28	17.2
Central sewage system	24	14.7
No response	65	39.9
Total	163	100.0

Source: Author's fieldwork June 2012

Probably because 39.9% refused to respond to the question, while only 17.2% (Table 13) of them proposed sewage treatment plant, 14.7% considered central sewage system appropriate for sanitary and proper disposal of the excrete waste. 28.2% of the respondents recommended septic tank with soak-away pit.

Profile of excrete waste handlers

Waste handlers' office locations

The offices of waste handlers are located within the 4 Local Government Areas surrounding the discharge point at Iddo.

Table 14 : location of offices of waste handlers

Location	Local government area	Frequency	Percentage
Lagos Island	Lagos Island	4	12.1

Iddo	**Apapa**	**24**	**72.7**
Amukoko	**Ajeromi/Ifelodun**	**1**	**3.0**
Orile	**Apapa**	**1**	**3.0**
Ebute-Meta	**Lagos Mainland**	**2**	**6.1**
Ijora	**Apapa**	**1**	**3.0**
Total		**33**	**100.0**

Source: Author's fieldwork June 2012

According to table 14, 72.7% of them have their offices located on the site in question, 12.1% in Lagos Island, while 6.1% located their offices at Ebute-Meta. Few of the waste handlers (about 3.0%) have their offices at Amukoko, Orile and Ijora respectively this shows that they are allowed to run at the designated places around the discharge point.

Excreta waste handlers' areas of operation

Table 15 depicts multiple responses of excrete waste handlers concerning their areas of operation almost all of them can run in areas listed in the table. This shows that they hardly have restriction to areas and that they can evacuate septic tank anywhere they are invited among the areas listed in the table.

Table 15 : Designated areas of operation for excrete waste handlers

Areas of operation	Frequency (n=33)	percentage
Apapa	**26**	**78.8**
Ebute-Meta	**25**	**75.8**
Surulere	**22**	**66.7**
Ajegunle	**14**	**42.4**
Ijora	**33**	**100.0**
Amukoko	**33**	**100.0**
Badia	**33**	**100.0**
Lagos Island	**25**	**75.8**
Iddo	**33**	**100.0**
Adekunle	**8**	**24.2**

Source: Author's fieldwork June 2012

Legend was more than one area sourced.

Authority in charge of excrete waste handlers in Lagos State

Sewage Department, Ministry of Environment, Alausa, Ikeja, Lagos, is the authority in charge of registering waste handlers in Lagos State. According to Table 16, 93.9% of excrete waste handlers sampled said state government is in charge of incorporating their operations.

Table 16 : Authority in charge of registering waste handlers in Lagos State

Authority	Frequency	Percentage
State Government	31	93.9
Indifferent	2	6.1
Total	33	100.0

Source: Author's fieldwork June 2012

However, 6.1% of the respondents failed to answer the question, yet it is obvious that the authority is aware of the operations of excrete waste handlers, and the discharge of untreated excrete into the lagoon. This must have prompted 36.4% of excreta waste handlers (as shown in Table 17) to assert that the authority assent to their discharging of the excrete waste into the lagoon. 3.0% said no, and 60.6% refused to respond to the question, probably out of fear of being vindicated by the researcher.

Table 17 : Permission to dislodge at Iddo discharge point

Response	Frequency	Percentage
Permitted	12	36.4
Not allowed	1	3.0
Indifferent	20	60.6
Total	33	100.0

Source: Author's fieldwork June 2012

During one of the researcher's off record sessions with the officials, a senior engineer was of the opinion that the lagoon water can dilute and disinfect the excrete waste to the level that is harmless to living organisms. Rhetorically, he asked the researcher if he had seen any dead fish afloat on the lagoon! Should there be delay until such a dangerous time before reacting?

Number of trips per day

Table 18 shows the number of trips that each excretes waste handler makes in a day. 12.1% of the respondents make a trip in a day. Those who claimed to make 2trips in a day are 21.2%. 48.5% confirmed to be making 3trips in a day, while 18.2% make 4trips in a day about 70.0 per cent of the waste handlers make 2 to 3trips in a day. 33 excrete waste handlers are registered to run at Iddo and its environs.

Table 18 : Suggested frequency of trip per day by respondents.

Number of trip	Frequency	Percentage
1	4	12.1
2	7	21.2

3	**16**	**48.5**
4	**6**	**18.2**
Total	**33**	**100.0**

Source: Author's fieldwork June 2012

To forecast the number of trips that excreta waste handlers make on the premise of 3trips per day, for 33excrete waste handlers, legally registered to run at Iddo and adjourning settlements, 99trips is probable in a day. That shows that 495,000litres of faecal effluent is discharged into the Lagos lagoon at Iddo every day in a month, it is 14, 850,000litres, while 178,200,000litres is discharged annually (the volume of the tank being used is 5000litres).

Precautions against infections

There is no known medical precaution available for excrete waste handlers to cushion health risks associated with direct dealing with faecal matter in this study. In table 19, 87.7% of excrete waste evacuator wears gloves, while 12.2% cover their nose against possible contact of faecal-oral infections during their operation.

Table 19 : Nature of reported precautions against disease

Nature of precaution	Frequency	Percentage
Covering of nose	**4**	**12.2**
Wearing of gloves	**29**	**87.9**
Total	**33**	**100.0**

Source: Author's fieldwork June 2012

Diseases among excrete waste handlers

Out of the 33waste handlers sampled, 17 (51.5%) willingly divulged information about ill health they had suffered due to frequent bodily contact with raw faecal effluent, while 16 (48.5%) decline to make their health status publicly. In Table 20, 18.1% had suffered from diarrhea, 12.1% from typhoid and stomach-ache respectively; while 3.1% confirmed having experienced malaria, and 6.1% cough this record has to do with their unguarded exposure to faecal effluent during operation.

Table 20 : Reported cases of diseases among excrete waste handlers

Nature of disease	Frequency	Percentage
Typhoid	**4**	**12.1**
Diarrhoea	**6**	**18.1**
Cough	**2**	**6.1**
Stomach-ache	**4**	**12.1**
Malaria	**1**	**3.1**
No response	**16**	**48.5**
Total	**33**	**100.0**

Source: Author's fieldwork June 2012

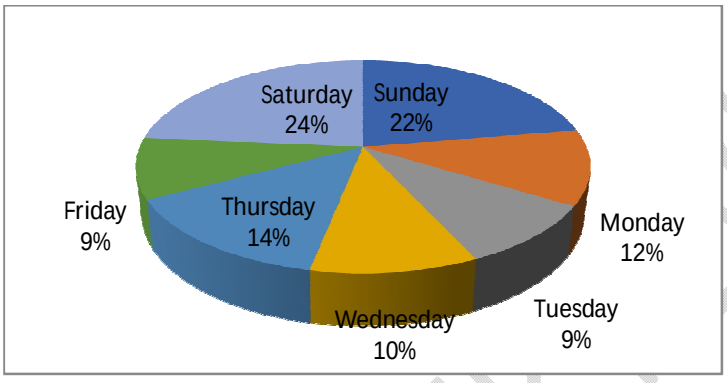
Service charge

Charge for evacuating faecal mater

In spite of the obvious and inevitable health risks associated with dealing in evacuation and discharge of faecal matter, it remains a lucrative venture. Charge collectible per trip is consonance to distance and ranges from four to eight thousand naira, depending on the source of evacuation.

Fig 5 : Daily discharge of excreta waste 12th March- 11th April 2012

(Volume in litres)

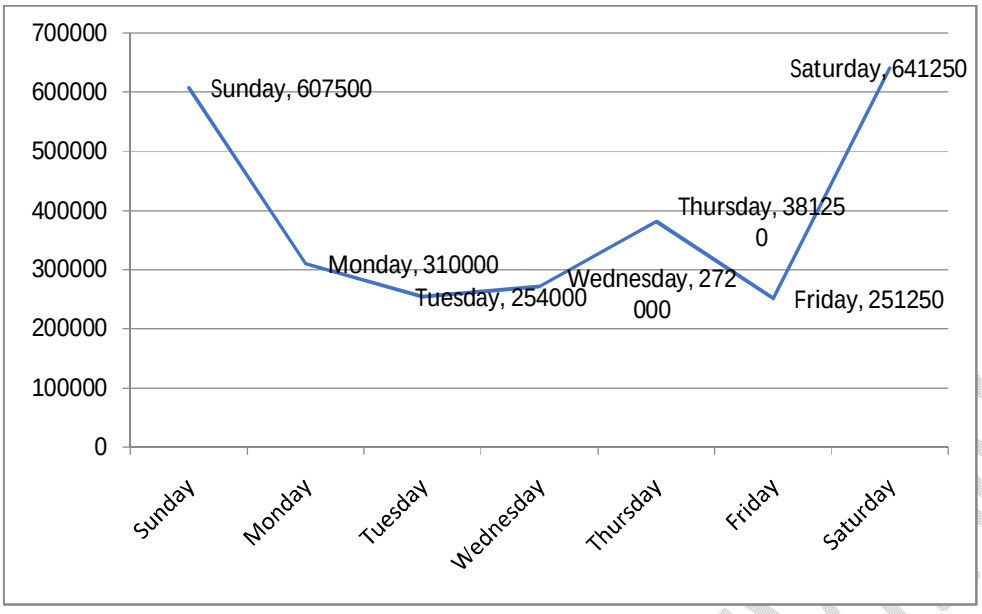


Source: Author's Analyses, June 2012

Mondays showed the range of 275,000litres it showed that there was also much difference between the maximum (450,000 litres) and the minimum (275,000 litres) volume of excreta discharged. However, the standard deviation (103,803 litres) depicted that there was much divergence from the mean (310,000 litres) recorded for volume of excreta discharged into the lagoon at Iddo on the five consecutive Mondays during which the survey was carried out, while the variance (1.1E+10) showed that the volumes of excreta discharged on Sundays vary slightly.

Fig 6 : Daily discharge of excrete waste 12th March- 11th April 2007

(Volume in litres)



Source: Author's Analyzes, June 2012

On Tuesdays the range was 195,000 it showed that there was also much difference between the maximum (375,000 litres) and the minimum (180,000 litres) volume of excreta discharged. However, the standard deviation (73,007 ltres) depicted that there was much divergence from the mean (25,400 litres), that is higher volume was recorded on some Tuesdays, while the variance (5.3E+09) also showed that the volume of excreta discharged on Tuesdays exhibited much variation.

Table 21 : Summaries of daily discharge of excreta at Iddo Jetty (Volume in litres) descriptive statistics

Days	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Sunday	4	50,000	590,000	640,000	607,500	22,546	5.1E+08
Monday	5	275,000	175,000	450,000	310,000	103,803	1.1E+10
Tuesday	5	195,000	180,000	375,000	25,400	73,007	5.3E+09
Wednesday	5	175,000	185,000	360,000	272,000	66,200	4.4E+09
Thursday	4	295,000	280,000	575,000	381,250	132,311	1.8E+10
Friday	4	180,000	140,000	320,000	251,250	77,500	6.0E+09
Saturday	4	275,000	530,000	805,000	641,250	131,426	1.7E+10

Legend – N- Number of days during the monitoring

Source: Author's fieldwork June 2012

The range (175,000 litres) recorded on Wednesdays was high the standard deviation (66,200 litres) showed that there was astound difference from the mean (272,000 litres) recorded. The variance 4.4E+09 showed that the volume of raw excreta discharged into the lagoon at Iddo on the five Wednesdays surveyed was unequal, and that higher volume was recorded on some Wednesdays.

On Thursdays the range was 29,500 litres. It showed that there was less difference between the maximum (575,000 litres) and the minimum (280,000 litres) volume of excreta discharged.

4. Conclusion

In conclusion, addressing grief and improving older person care in Lagos State requires a concerted effort from various stakeholders, including government agencies, healthcare providers, and community organizations. Recognizing the diverse nature of grief and tailoring interventions accordingly is crucial for effective support.

Furthermore, a comprehensive approach to elderly care should encompass not only medical attention but also social, emotional, and recreational support. This holistic perspective is essential for promoting a dignified and fulfilling life for older persons in Lagos State.

Ethical approval (where ever applicable) Through google form by health professional on each platform

References

United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Ageing 2019 (ST/ESA/SER.A/444). Retrieved from https://population.un.org/wpp/-Publications/Files/WPP2019_Highlights.pdf

Ghesquiere, A., Shear, K., & Duan, N. (2018). "Advancing Grief Theory: New Perspectives on the Process of Healing." In D. Klass, P. R. Silverman, & S. L. Nickman (Eds.), Continuing Bonds in Bereavement: New Directions for Research and Practice (pp. 17-32). Routledge.

World Health Organization. (2015). World report on ageing and health. Retrieved from https://www.who.int/ageing/events/world-report-2015-launch/en/

Abiodun, O. A., Balogun, O. R., & Johnson, O. E. (2017). Cultural practices surrounding death, mourning, and caregiving in Nigeria: Implications for elderly care. Aging International, 42(3), 328-340.

Ogunlana, A., Olajide, O. T., & Afolabi, M. (2021). Understanding Grief Management and Elderly Care in Lagos State, Nigeria: Addressing a Research Gap. Journal of Gerontological Nursing, 47(5), 25-30.

Aboderin, I. (2010). Modernization and aging theory revisited: Current explanations of recent developing world and historical Western shifts in material family support for older people. Ageing & Society, 30(4), 543-562.

Adebiyi, A., Olatunji, B., & Eze, I. (2022). Understanding Grief Management and Elderly Care in an Urban Context: Implications for Lagos State, Nigeria. Journal of Aging and Urban Health, 10(2), 87-96.

Adebusoye, L. A., Ajayi, I. O., Dairo, M. D., Ogunniyi, A. O., &Bamgboye, E. A. (2017). Geriatric care in Nigeria: Policies, programs and challenges. Indian Journal of Gerontology, 31(4), 415-427.

Adedokun, A., Okoje, V., Ojelabi, F., & Aboderin, I. (2018). Financial capability and old age vulnerability in Nigeria: A gendered perspective. Journal of Aging & Social Policy, 30(2), 183-199.

Adegoke, B. (2018). Grief and bereavement practices in Nigeria: Implications for counseling. The African Symposium: An online journal of the African Educational Research Network, 18(2), 127-137.

Afolabi, M. O., Olatona, F. A., & Afolabi, A. A. (2015). Availability and adequacy of health care services for elderly people in Lagos, Nigeria. Age International, 1(1), 32-43.