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From Perception to Effect of Oil Spillage Among Fishermen in the Niger Delta Region of Bayelsa State, Nigeria

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Abstract

Oil spillage continues to pose a significant environmental threat in Nigeria's Niger Delta, leading to ecological degradation, disruption of livelihoods, and socio-political instability. This study investigates the perceptions and impacts of oil spillage among fishermen in the Biseni community of Bayelsa State. Utilizing a descriptive cross-sectional design, data were collected from 358 respondents selected through systematic random sampling. A semi-structured, interviewer-administered questionnaire was employed, and responses were analyzed using SPSS version 16. The results show that 94.4% of respondents identified pipeline corrosion from soil-related factors as a major cause of oil spillage. Other commonly perceived causes included sabotage by surveillance contractors (86.3%), pipeline vandalism (85.2%), and unemployment (84.1%). Water pollution was identified by 98.0% of respondents as the most severe

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environmental consequence, particularly affecting aquatic life. Health impacts were also substantial, with 96.9% reporting adverse effects, skin rashes being the most frequently cited (32.0%). Economically, 95.5% of respondents reported reduced income due to declining fish yields. Broader socio-economic impacts included perceived links to unemployment (91.9%), increased kidnapping (79.6%), lack of compensation (80.4%), displacement (35.8%), and the need to purchase drinking water (70.4%). The study concludes that repeated oil spillage and unregulated exploitation have caused significant environmental and socio-economic harm in the Biseni community. The lack of effective compensation mechanisms intensifies local grievances and underscores the urgent need for sustainable environmental governance and enhanced corporate accountability in oil-producing areas.

Keywords: Oil Spillage; Environmental Degradation; Fishermen; Perception; Bayelsa State

INTRODUCTION

Oil spillage is a global issue that has been occurring since the discovery of crude oil, which was part of the industrial revolution.[1] The total spillage of petroleum in the oceans, seas and rivers through human activities is estimated to range between 0.7 and 1.7 million tons per year in the Niger- Delta.[1] Oil spills have posed a major threat to the environment of the oil producing areas which, if not effectively checked, can lead to the total destruction of ecosystems. The Niger-Delta is among the ten most important wetland and marine ecosystems in the world.[1, 2]The oil industries located within this region have contributed immensely to the growth and development of the country which is a fact that cannot be disputed but unsustainable oil exploration activities has rendered the Niger-Delta region one of the five most severely petroleum damaged ecosystems in the world.[3, 4]

The situation in Nigeria's Niger-Delta helps illustrate how oil spillage negatively affects the environments, and because of the high frequency of oil spillages in Niger-Delta, many local communities have been destroyed, ground water contaminated, and the ecosystem and soil composition irreversibly altered. Studies show that in the Niger Delta, a year's supply of food is often destroyed by only a minor leak of oil, debilitating the farmers and their families who depend on the land for their livelihood thereby leading to abject poverty.[5] Drinking water has also been contaminated by oil spills causing serious health problems to the inhabitants in the oil bearing communities. Offshore spills, which are usually much

greater in scale, taint coastal environments in the Niger Delta, causing a decline in local fishing production. The rainforest, which previously occupied 7,400 km^2, has disappeared and oil spillage in the Niger-Delta has destroyed its mangrove forests. Estimates suggest that 5-10% of Nigerian mangrove ecosystems have been wiped out by oil spills; oil spills acidify the soils, thus halting cellular respiration and starving plant roots of oxygen leading to loss of biodiversity in breeding grounds and vegetation's hazards.[6]

Oil spills can have several detrimental effects on soil. Soil contaminated with oil has characteristics that render it less useful to human beings in most cases. Oil pollution in the environment has been a major source of concern to the people living in the crude oil rich areas. Oil pollution due to a spill could take place in water or on land. Crude oil pollution on land depends on a number of factors which include the permeability of the soil, adsorption properties of the soil and the partition coefficient.

Oil spillage leads to loss of income and means of subsistence for individuals and companies in fishing, shrimp, and oyster industries. This affects fishermen and women, charter boat operators, owners of hotels, tourist management agencies, rental property owners, and other businesses in coastal resort areas[7] Oil spillages most times result in damage to residential and commercial properties located along the coastal zones and small islands offshore where major oil spills occur. Property damage also arises from the use of toxic chemicals and oil dispersants to aid the clean-up of major oil spills. This also results in forced displacements and relocation for individuals in affected areas.[8]

Major oil spills affect human health and well-being; residents of oil-producing areas sometimes have to cope with drinking water that contains residual oil even many years after clean-up.[4] There is also the lasting health effects of chemical dispersants used during clean-up. For example, many residents of the Niger Delta have complained of asthma, breathing difficulties and pain, headaches, nausea, and throat irritation as well as chronic bronchitis. Oil spillages also cause impairment of human health, high mortality to humans and aquatic animals. Such health concerns can bring about substantive causes of action in toxic tort for exposure to dangerous substances and chemicals.[9] The invasion of water hyacinth is another problem caused by oil spillages. Water hyacinth is an invasive species that was introduced into Africa as an ornamental plant, and which thrives in polluted environments. Water hyacinth can completely clog the waterways in which it grows, making it nearly impossible for fishing boats to navigate. In recent years it has found its way into the Niger

River, choking out both sunlight and oxygen to the marine organisms that live in that environment.[10]

The effects of the operations of the oil companies on the environment are not only devastating but have triggered off series of crisis. Most of the conflicts have arisen from complex environmental problems and a long history of basic neglect and social development of peoples who have seemed helpless watching their land and water resources continually devastated by intensive exploitation for petroleum and gases without deriving any appreciable benefits by way of investment in their own development.[6] Since the discovery of oil in Nigeria in the 1950s, the region has been suffering the negative environmental consequences of oil development.[11]

One of the major environmental problems in the Niger-Delta Region of Nigeria since the inception of oil exploration, exploitation, processing and transportation by the multinational oil companies has been that of oil spillage.[12] Oil spillage in the Niger-Delta Region has caused a diverse depletion of environmental assets and values added, it has caused hardship and poverty among the host communities.[13] Oil Spillage has a major impact on the ecosystem into which it is released. It destroys the mangrove forests which are especially susceptible to oil; this is mainly because it stores up oil in the soil and re-releases it annually with inundation. In onshore areas, most pipelines and flow lines are laid above the ground and are more than twenty-four years old.[14] Even one of the oil company in the region, Shell, admits that most of the facilities have fifteen years estimated life span.[14] The revenues and incomes generated by the petroleum industry have contributed very significantly to the economic well- being of Nigeria as a whole, petroleum exploration and production has however posed several environmental economic and social problems. It has been found out that the problems of oil spillage are more pronounced on the aquatic habitat than on the terrestrial habitat. Basically, the problem that prompted this study is on the negative effects of oil in Nigeria. The influence of oil to the prime position in Nigeria and the neglect of all other non-oil sector gave Nigeria a mono-cultural economy or a one legged economy. Despite being the 8th largest producer of crude oil, what we have in the country to show the world is an unprecedented level of unemployment. Nigeria today is one of the poorest countries of the world as measured by the United Nations Development Programmed (UNDP) and Human Development Index (HDI)[15] Poverty, unemployment, corruption at high levels, misery, lack of basic human

needs etc, seem to be the lot of the people. Oil, rather than being a blessing to the people, is now being regarded as a curse, negative things, rather than positive things.[26]

Oil-related activities have brought with them the politics of oil and that this has ignited and exacerbated oil related conflicts in the oil-bearing areas. These conflicts are multi-dimensional. The communal conflicts can take the form of conflict within a community, conflict between communities, and conflict between host communities and the oil companies. The intra- and inter-communal conflict is usually oil-induced[8]. The presence of oil has exacerbated political disputes over territory or other rights. While territorial disputes in the area predate the discovery of oil. For instance, the Ugbo and Mahin-Ilaje conflicts during the British rule led to the deportation of the traditional ruler of Ugbo-Ilaje by the British imperial ruler.[9] However, since the discovery and commercial exploitation of oil, many of the conflicts between communities in the area are fuelled by the presence of oil. A case in point is bloody conflict of 1998 between the Arogbo-Ijaw and the Ugbo-Ilaje, which was attributed to the presence of oil in a boundary town between the two ethnic groups.[15] Even though the oil industry is blamed for a range of ills and for not doing enough for the areas where they operate, communities are also aware of the potential benefits of having oil pipelines travel through their land or the presence of a flow station and the opportunities for compensation payments and contracts that will result, even if the compensation only reaches a few. Therefore, disputes between communities, which may have been latent can be stirred up by the suggestion that an oil installation is planned as well as damage caused by oil pollution.[6, 7]

Kidnapping of foreign workers of oil companies and the request for a ransom before their release was the order of the day for these militant groups. Vandalism of oil pipelines owned by the government and multinational oil companies was not left out. Oil theft was another major activity carried out by these militant groups. All these led to not only oil spillage but "blood spillage". In 2010, the federal government granted Amnesty to these militant groups and till date pays "salary" to the youths that surrendered their arms and ammunition. Despite the amnesty granted, there are recent cases of kidnapping, vandalism and oil "Bunkering" in the Niger-Delta area of Nigeria. Pipeline vandalism is common in Nigeria despite the risk of deadly fire or punishment including prosecution or being shot on site by security forces and ultimately blood spillage. Worthy of note is the fact that it is not only in the Niger-Delta region that oil spillage occurs in Nigeria.

Oil theft, sabotage and pipeline vandalism is carried out by criminals in difference states like Ogun, Oyo, Enugu and Lagos states to mention a few. More so, oil spillage occurs from oil tankers across the states in Nigeria. Due to the breakdown of operations of Refineries in the country, oil tankers transport petrol and kerosene from the southern parts to the Northern parts of Nigeria. Thousands of lives have been lost when oil tankers spill the product they carry and properties worth billions of naira lost[6,17].

In 1956, Shell British Petroleum (now Royal Dutch Shell) discovered crude oil at a village called Oloibiri in Ogbia Local Government Area of Bayelsa State located within the Niger-Delta of Nigeria and commercial production began in 1958[2]. As at 2006, there were eleven oil companies operating in the region, 159 oil fields and 1,481 oil wells were in operation in the Niger Delta.[4, 5]Human activities and those of oil exploration and exploitation raise a number of issues such as depletion of biodiversity, coastal and riverbank erosion, flooding, oil spillage, gas flaring, noise pollution, sewage and waste water pollution, land degradation and soil fertility loss and deforestation, which are all major environmental issues. Oil exploration and exploitation have been ongoing for several decades in the Niger-Delta. It has had disastrous impacts on the environment in the region and has adversely affected people inhabiting the region.[6] The growth and development of the oil and petrochemical industry in Nigeria with emphasis on the notable cases of pollution disturbances during the 50 years of its existence, highlighting causes and effects on the social, economic, agricultural and ecological characteristic on human and other biotic occupants of the oil region.[18] The effects of the operations of the oil companies on the environment are not only devastating but have triggered off series of crisis. Most of the conflicts have arisen from complex environmental problems and a long history of basic neglect and social development of peoples who have seemed helpless watching their land and water resources continually devastated by intensive exploitation for petroleum and gases without deriving any appreciable benefits by way of investment in their own development.[6] Since the discovery of oil in Nigeria in the 1950s, the region has been suffering the negative environmental consequences of oil development.[19]

The effects of intensive oil resource extraction on the environment of the oil bearing Niger-Delta communities are environmental problems such as resource degradation, pollution and poverty in the Niger Delta communities. The oil spillage incidences in Nigeria with its negative implication on the environment, suggest the extent of hazards and the tendency of petroleum products to pollute the environment. The implications of oil

exploration and environmental degradation to sustainable development of the Niger-Delta region, explaining this has culminated into poverty, restiveness and human insecurity in the region.[20]

In general, the assessment of other researchers into this issue acknowledges that the oil industry has undoubtedly brought economic benefit to the Nigerian State but has left environmental pollution problems with visible physical destruction. The prevention of environmental degradation is a task that must be pursued vigorously.[13] The identification of problems, design and applying appropriate sanctions are major issue that need to be resolved and has to start with change in the present judicial system and attitude towards the litigation of environmental issues as well as a reform in environmental policies.[20-24]

Oil spills occur when petroleum, plant- or animal-based oils enter the environment unintentionally. Oil spills daily on land and water; most of the oil eventually makes its way into the water through runoff. Causes range from consumers who spill oil when filling their cars with gas to high-profile oil industry accidents that spew millions of gallons.[7]The type of oil spilled affects cleanup methods, and different types of oil spills have different effects on wildlife and human habitats. When an oil spill occurs, responders consider factors such as oil toxicity, rate of oil spreading, and length of time for oil to break down. Other important considerations include location of the spill and weather conditions.[8, 9]

Class A Oil

Class A oil is light and fluid spreads quickly when spilled and has a strong odour. Class A oil is the most toxic but least persistent of all oils. If the oil soaks into the soil, the effects will be long lasting. In water, class A oils disperse readily but affect aquatic life in the upper water column. Class A oils include high-quality light crude oils as well as refined products such as gasoline and jet fuel. Toxic components of gasoline include benzene, a known carcinogen, and hexane, which can damage nervous systems in humans and animals.[8]

Class B Oil

Class B oils are known as "non-sticky" oils. They are less toxic than class A oils but more likely to adhere to surfaces. According to the U.S. Fish and Wildlife Service, they can cause long-term contamination. Lower-quality light crude oils and refined products such as kerosene and other heating oil's fall into class B. Class B oils leave a film on surfaces, but the film will dilute and disperse if flushed vigorously with water. Class B oils are highly flammable and will burn longer than class A oils.[8]

Class C Oil

Class C oils are heavy and sticky. While they do not spread as quickly or penetrate sand and soil as easily as lighter oils, class C oils adhere strongly to surfaces. Class C oil does not easily dilute and disperse, making it especially detrimental to wildlife, such as fur-bearing marine mammals and waterfowl. Because it produces such a sticky film, a class C oil spill can severely contaminate intertidal zones, leading to expensive, long-term cleanups. Class C oils include most types of crude oil and bunker B and bunker C fuel oils. Such oils are prone to forming lumps of oil or emulsions.[11]

Class D Oil

Class D crude oil is solid and has the least toxicity. The biggest environmental concern posed by class D oil occurs if the oil is heated and hardens on a surface, making cleanup nearly impossible. The U.S. Environmental Protection Agency points out that as the volatile components of some oils evaporate they may leave behind class D residues.[8]

Oil spillage often impacts substantial land area with grave consequences on the vegetation, economic crops/trees, aquatic life, and the entire eco-system. The impact of oil spills is often widespread and could persist for several years with attendant adverse repercussions on both the health and means of livelihood of people living within the impacted area.[12] Due to one or a combination of corrosion of pipe and storage facilities (internal and external), operation failure (system or human), mechanical failure (construction, material or structural), natural hazards (subsidence, flooding and others) and particularly third party activities (malicious/sabotage incidents and acts of sabotage), a plum of petroleum product may infiltrate the underground water, or be released into the environment.[15]

The harmful effects of oil spill on the environment are many. Crude oil contains more than 200 poisonous substances. Nigerian crude oil is in particular highly toxic.[15] When crude oil spills into an aquatic or tidal environment, it flows and masks the surface of the waters, and anything impacted or contaminated may be rendered useless or destroyed.[12, 16] According to Achebe, oil spillage kills plants and animals in the estuarine zone. Oil settles on beaches and kills organisms that live there, settles on ocean floor and kills benthic (bottom-dwelling) organisms such as crabs. It also coats birds, impairing their flight or reducing the isolative property of their feathers, thus making the birds more vulnerable to cold. Oil spillage endangers fish hatcheries in coastal waters and also contaminates the flesh of commercially valuable fish.[14] The light components of crude oil evaporates into the air and

subsequently descend into the atmosphere in the form of acid rain which does not only pollute fishermen's open dug-out water well, the only source of drinking water in the local communities, but can cause respiratory diseases, among others.[16, 17]

Moreover, the heavy components of oil sinks into the bottom of the river from where it continues to emit toxic materials for several years as it is not often easily biodegraded.[12] When crude oil spills into waters, fishes and their eggs and fingerlings, as well as the oysters, periwinkles, and mudskipper in the mangrove swamps are killed. Oil poisons algae, disrupts major food chains and decreases the yield of edible crustaceans. Fishing activities may be terminated because there is both surface water pollution and sea bed pollution which may persist for a very long time. Fishing nets are often destroyed or become useless once contaminated with crude oil sleeks because the nets are by- products of crude oil. In a bid to clean oil spills by the use of oil dispersants, serious toxic effects is exerted on plankton thereby poisoning marine animals.[19, 20]

This can further lead to food poisoning and loss of lives. In the Nigerian coastal area, large part of the mangrove ecosystem which once served both as a habitat for biodiversity and a source of fuel for the indigenous people, have been destroyed by oil spills.[15] The duration of the environmental impact of oil spillage is directly related to the physical persistence of the oil on the affected property which varies from parcel to parcel, depending on the character of the shoreline, the severity of the initial spillage and the degree and effectiveness of the cleanup. On some heavily oiled shoreline segments, the physical persistence and therefore, the market impact could last as long as 24years.[13]

Farmland effect

The petroleum hydrocarbon has seeped/ percolated into the ground and massively impaired the agricultural land. The seeping of the hydrocarbon into the ground has rendered the soil sterile and adversely affected its future agricultural productive capacity.[20]

Effect on Economic Trees

The lethal harms visited on these trees are clearly manifested in their foliar damage and the vegetation. These may die off and the environment will be left bare. Such huge loss will have great ecological and economic consequences on the inhabitants.[22]

Health Hazards effect

The health implications of oil spillages are many. Generally, people in the affected areas complained about health issues including difficulty in breathing, skin diseases and cholera outbreak in oil producing Communities in the oil spills areas as a result of drinking and bathing polluted water and also breathing of polluted air. Many have lost basic human rights such as health, access to food, clean water, and an inability to work. It is pertinent to point out that with the massive pollution of the community's sources of water, rivers, streams, creeks, lakes etc and the atmosphere after oil spillage, the health of the people in oil producing communities is deteriorating every passing day .[10]

Internal Displacement effect

An article argues that environmental degradation arising from oil spillages result in internal displacement of communities in the Niger Delta. This tends to diminish the productivity of farming and fishing in the community. This causes its members, as a group, to relocate and also results in occupational and income losses that lead to both voluntary and involuntary migration.[11] Consequently, loss of ancestral homes, familiar surroundings, and religious and other cultural artifacts are the psychological and social problems associated with displacement.[4] Hence, environmental degradation, caused by the Oil industry does not only have the potentials of exacerbating the tragedy of internal displacements in the Niger Delta, but is responsible for many of the dislocations experienced in the area/region. The collapse of local economies, induced by oil spillages, and other activities of the oil industry had displaced many from their occupations, without providing viable alternatives, the pressures of survival do encourage forced migration or induce voluntary movement that manifests as rural – urban or rural – rural migration in the area.[11]

Similarly, the World Bank noted that environmental degradation arising from oil spillages and oil exploring activities is a major source of productivity losses (World Bank 1995). In agricultural communities, often a year's supply of food can be destroyed instantaneously.[24]

The aim of the study was to assess the perception of fishermen and effect of oil spillage in Biseni Community and hence, to identify the effects of oil spillage

METHODOLOGY

Study Area: The Biseni community consists of about ten/settlements villages and is located in the Yenagoa Local Government Area of Bayelsa State, Nigeria. Biseni community is in the South latitude: 5°14'31.8"N 6°32'30.7"E, Biseni community has an area of about 8.2Km$^{2.}$ Biseni community has one functional Cottage hospital, one Comprehensive Health Centre and three Primary health care centres. The Biseni Community has four primary schools and one Secondary Institution. Biseni community also has 29 oil wells, 2 clusters and 2 manifolds.

Bayelsa State is one of the thirty –six (36) states in Nigeria created on the 1st of October, 1996 with a population of 2 million people according to 2006 population census figure. Bayelsa State has an area of 21,000 square km, and about three-quarters of its total land mass are riverine. The mangrove forests and swamps in the southern part of the state are home to rich vegetation, while the thick forest in the northern part has arable lands used for agriculture. Bayelsa is situated in the heart of the Niger-Delta and produces about 30-40% of Nigeria's oil and gas.

Yenagoa is a Local Government Area in Bayelsa State, Nigeria. Its headquarters is Yenagoa (the State capital) in the south of the State at 4°55'29"N 6°15'51"E4.92472°N 6.26417°E. The LGA has an area of 706 km² and a population of 353,344 at the 2006 census.

English is the official language of the inhabitants, but Epie/Atissa dialect of the Izon language is the major language spoken in Yenagoa. Since attaining the status of state capital in 1996, construction and other activities have accelerated appreciably.

The Niger-Delta region derives its name from being situated at the mouth of the River Niger. Before the creation of the Nigerian states, economic activities of the Niger Delta in pre-colonial days entailed mainly export of salt and fish to the hinterland. In the 18th century, when the slave trade was at its peak, the region was West Africa's largest slave exporting area, and this was enhanced by its proximity to the sea. Slave traders, however, diverted to palm oil trade in the 19th century when the slave trade declined.

The Niger-Delta region is situated in the southern part of Nigeria and bordered to the south by the Atlantic Ocean and to the East by Cameroon, occupies a surface area of about 112,110 square kilometres. The Nine States of the Niger Delta Region are Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers.

The main ethic groups of the Niger-Delta region are the Ijaws (the largest ethnic group), the Itsekiris, Yorubas, Efiks, Ibibios and other smaller groups. Within Akwa Ibom State it is the Ibibios who make up the majority of population. The major traditional occupations include farming and fishing, while secondary occupations include industries like gin distillation, textile weaving, and boat carving. Tertiary occupations include trade and commerce, and transportation. Oil was first discovered in a village called Oloibiri in Ogbia Local Government Area of Bayelsa State of the Niger-Delta region in Nigeria. Since the inception of crude oil exploitations and explorations activity in the region, there has been series of oil spillages.

Study Design: The study was a cross-sectional descriptive study involving the use of questionnaire to obtain quantitative data from the respondents.

Study Population: The study population was adults 18 years and above who were registered members of the fishermen Association in Biseni Community, Yenagoa Local Government Area of Bayelsa State

Inclusion criteria: All the fishermen and women that were registered members of the fishermen Association in Biseni Community.

Exclusion criteria: Fishermen and women that were registered members of the association but had not spent up six months in Biseni Fishermen Association.

Sample Size Determination: Fischer's formula[47] for sample size determination was used to calculate the minimum sample size from the population of registered fishermen in Biseni Community. Population of the fishermen residing in Biseni community was estimated to be 2000. The formula for studying proportions with population less than 10,000 to calculate the sampling size was used as described below.

$$n = \frac{Z^2 pq}{d^2}$$

$$n_f = \frac{n}{1+\frac{n}{N}}$$

Where;

n = the desired Sample Size when population is >10,000

z = Standard normal deviation =1.96

p= the proportion of the community estimated to have effects of oil spillage; estimated to be 50% (since there is no past study on the topic).

q = the proportion of the community without effects of oil spillage =1.0-p

d= precision or degree of accuracy, usually set at 0.05

n_f = desired sample size when population is <10,000

N=estimated population size

$$n = \frac{Z^2pq}{d^2}$$

$$= \frac{(1.96)^2(0.5)(0.5)}{0.05^2}$$

n =384

Since estimated target population is <10,000

Therefore;

$$n_f = \frac{n}{1+\frac{n}{N}}$$

$$n_f = \frac{384}{1\frac{384}{2000}}$$

n_f=322

To compensate for non-response, 10% of the original sample size was added.

$$= \frac{322}{0.9}$$

=358

A total of 358 fishermen and women participated in the study.

Sampling Technique: Systematic random sampling technique was adopted to choose the eligible respondents. There were 2000 registered fishermen in Biseni Fishermen Association (sampling frame). Sampling interval (k) was determined by K=N/n= 2000/358= 6,where N was the sampling frame and n the sample size. The index subject was selected by simple random sampling method by balloting among the first six members of the association listed on the register. Subsequent subjects were recruited for the study from the sampling frame at regular intervals of six. Where selected respondent was not available, the next person on the list was picked.

Data Collection Tools: Four trained research assistants used interviewer administered semi-structured questionnaire to collect data; the questionnaire contained questions used to

obtain information on the attitude and factors influencing oil spillage among the study subjects.

Measurement of variables

1. The perceptions of respondents on the effects of oil spillage were scored in two categories (effects on aquatic life and on fishermen). There were six and eleven questions on the perceived effects of oil spillage on aquatic life and fishermen respectively. Each question had 3 options of 'Yes', 'No' and 'No Idea' with the 'No Idea'option taken as 'No' response. The responses of each participant were divided into positive and negative perceptions with each response being scored a point.

Statistical Analysis: Data analysis was done using SPSS version 16 software package. Data were presented as frequency tables, charts and cross tabulation of important variables. Perception score and attitude score as outcome variables were cross-tabulated against the socio-demographic variables as independent variables observed among the respondents. Appropriate test of significance was also carried out using Chi-square test. Statistical significance was set at ($p<0.05$)

Ethical Considerations: Confidentiality were ensured as the participants were not asked to write their names nor any means of identification

RESULTS

Table 1: Socio-demographic Characteristics of Respondents (n=358)

Variables	**Frequency**	**Percentage**
Age groups		
≤ 20	12	3.4
21 – 30	168	46.9
31 – 40	68	19.0
41 – 50	63	17.6
51 – 60	34	9.5
> 60	13	3.6
Gender		
Male	189	52.8
Female	169	47.2
Marital status		
Single	150	41.9
Married	182	50.8
Divorced	15	4.2
Widowed	11	3.1

Table 2: Socio-demographic Characteristics of Respondents (n=358)

Variables	Frequency	Percentage
Educational Status		
No formal education	105	29.3
Primary	115	32.1
Secondary	95	26.5
Tertiary	43	12.0
Religion		
Christianity	340	95.0
Traditional	18	5.0
Settlement		
Egbebiri	192	53.6
Tein	64	17.9
Akpide	71	19.8
Tuburu	29	8.1
Ethnicity		
Ijaw	353	98.6
Urhobo	2	0.6
Ilaje	2	0.6
Isoko	1	0.3

One hundred and sixty-eight (46.9%) respondents were in age group 21 -30years with more male (52.8%) than female. About half of the respondents were married (50.8%), 32.1% had primary school education with almost all (95.0%) of the respondents being Christians. However, 53.6% were of Egbebiri settlement and almost all (98.6%) the respondents were Ijaws.

Table 3: Respondents purpose of fishing and other means of livelihood

Purpose of fishing	**Frequency**	**Percentage**
Commercial	191	53.4
Household consumption	167	46.6
Other means of livelihood		
Trading	177	49.4
Civil servant	32	8.9
Driver	100	27.9
Others	49	13.7

More than half (53.4%) of the respondents does fishing mainly for commercial purpose and other means of livelihood was majorly (49.4%) trading.

Table 4: Perceived effects of oil spillage on Fishermen by respondents

Variable	Frequency		
	Yes (%)	No (%)	No Idea (%)
Health problems as a result of spillage**(n=358)**	347 (96.9)	5 (1.4)	6 (1.7)
Oil spillage causesGastrointestinal disease**(n=347)**	329 (94.8)	7 (2.0)	11 (3.2)
It causes respiratory disease	335 (96.5)	3 (0.8)	9 (2.6)
Major cause of skin infection	340 (98.0)	10 (2.6)	1 (0.3)
It causes sight problem	319 (91.9)	9 (2.5)	19 (5.5)
Colleagues who died due to oil spillage**(n=358)**	84 (23.5)	56 (15.6)	218 (60.9)
Can result in income reduction	342(95.5)	8 (2.2)	8 (2.2)
It has change my way of life Negatively	347(96.9)	5 (1.4)	6 (1.7)
It has affected my way of life Negatively	342 (95.5)	15 (4.2)	1 (0.3)
It increases social vices	333 (93.0)	13 (3.6)	12 (3.4)
Collected money for damages	38 (10.6)	277(77.4)	43 (12.0)

Almost all (96.9%) the respondents perceived that the effect of oil spillage on fishermen was health problems, 95.5% perceived reduced income, 93.0% perceived increased social vices while only 23.5% of the respondents perceived that it caused death.

Table 5: Perception Scores for effects of oil spillage

Perception Score	Frequency	Percent
Aquatic lives		
Positive	14	4
Negative	344	96
Fishermen		
Positive	45	12.6
Negative	313	87.4

Almost all the respondents 344 (96%) had a negative perception scores for effects of oil spillage on aquatic lives while 313 (87.4%) of them had it on fishermen.

Table 6: Effects attributed to Oil spillage by the respondents

Variable	Frequency	Percent
Health (n=347)		
Skin rashes	117	32.7
Cough	111	31.0
Heart failure	99	27.7
Others	20	5.6
Source of drinking water (n=358)		
Buying of water	252	70.4
Water supply from LGA	37	10.3
By simple purification	69	19.3
Economic/Commercial (n=358)		
Buying of iced fish before spillage	23	6.5
Buying of iced fish after spillage	335	93.5

Two hundred and fifty-two (70.4%) of the respondents sourced their drinking water through buying of water, 93.5% of the fishermen bought iced fish after the occurrence of oil spillage as against 6.5% of them that used to buy the fish before oil spillage. However, 32.7%, 31.0% and 27.7% of the respondents had skin rash, cough and heart failure respectively as a result of oil spillage.

DISCUSSION

The mean age of respondents in this study was 35.5±12.4SD while the age ranged from 18 to 78 years. One hundred and sixty-eight of the respondents (46.9%) were majorly of age group 21-30 years. There were more male (52.8%) than female. About half of the respondents were married (50.8%) with 41.9% single. These indicate that fishing trade is predominantly for men and young adults. It is also a business of all categories of adults including youths and the elderly. The main sources of income for people of Biseni are peasant farming, fishing and small scale logging of the timber in surrounding forest.[3] One hundred and five (29.3%) of the respondents had no formal education, 115 (32.1%) and 95 (26.5%) had primary and secondary education respectively and only 43(12.0 %) of the respondents had tertiary education. This could be due to the fact that fishing in rivers does not require special skills and fishing is related to the socio-cultural life of Biseni community. Christianity was the religion of majority of the respondents (95.0%) because it was Christians dominated community.

The cosmopolitan composition of Bayelsa, is supported by the findings of mixed ethnic group within the study area, though the inhabitant were predominantly Ijaw (98.6%) which is a reflection of its setting and about half of the respondents were Egbebiri by settlement.

The purpose of fishing by respondents was more of commercial (53.4%) than household consumption (46.6%). This is supported by a study done in Rivers[26]The rich alluvial soil of the Delta coupled with copious web of fresh and salt- water bodies provide the necessary incentives for the people who are predominantly fishers and farmers.[26]Fishing forms the most dominant economic activity in the area.[12]Research showed that fishing accounts for at least 80% of the active labour force. Other means of livelihood by respondents were majorly trading (49.4%), 27.9% were also drivers and very few of the respondents were civil servant (8.9%).

The high percentage obtained in this study could be due to the fact that the people involved were being interviewed directly and partly due to increased awareness of people on the effects of oil spillage as compared to a research done ten years ago.

Effect of oil spillage on aquatic lives identified by respondents in this study included water pollution (98.0%), no longer catching the same type of fish (92.7%), driving of fishes away from its natural inhabitant (97.8%), and killing of fish and other aquatic lives (98.9%). This isin support of a study done in Rivers State[26]but in contrast to other study[1], where only 50% of the fish were killed or driven away as against 98.9% and 97.8% respectively. Oil spillage also contribute to the contamination and death of fishes which affect the economy and human health adversity.[12]Every aspect of oil exploration and exploitation has deleterious effect on ecosystem stability and local biodiversity which the people livelihood depend upon.[24]

Effect of oil spillage on fishermen identified by respondents was mostly (96.9%) health problems while other effects included increase of social vices (93.0%), reduction of income (95.5%) and death of fishermen which was confirmed by almost a quarter of the respondents 23.5%. Oil spillage is of great source of danger to the people and land at any given time. Majorly oil spillage affects human health especially fishermen[4].The proportions (87.0%) of the respondents with negative perception on the effects of oil spillage were consistently higher than those (13.0%) that had positive perception. However, the relationship between the perception of the respondents and their health problems were found to be statistically significant.

Oil spillage resulted in internal displacement of communities in the Niger Delta[11], and this tends to diminish the productivity of farming and fishing in the community. This also cause members as group to relocate and also result in occupational and income losses that lead to both voluntary and involuntary migration.[11]Consequently, loss of ancestral homes, familiar surroundings and religious and other cultural artifacts are the psychological and social problems associated with displacement.[4]Also, the collapse of local economies, induced by oil spillage and other activities of the oil industry had displaced many from their occupations, without providing viable alternatives, the pressure for survival do encourage forced migration or induce voluntary movement that manifest as rural-urban or rural-rural migration in the area.[11]

Most of the respondents in this study (80.4%) claimed they were not compensated for their loss, even though communities were aware of the potential benefits of having oil pipes travel though their land or the presence of a flow station and the opportunities for compensation payment and contracts that will result, even if the compensation only reaches a few.[6,7]This is in agreement with a study conducted in Ogun State[2] where 75.7% also claimed not being compensated and most of the oil producing communities already have their environments degraded,lost their farm land and rivers for fishing to oil spillage.[9]Majority of the respondents in this study bought water (70.4%) for drinking and domestic uses. This is not surprising as drinking water has been contaminated by oil spillage causing serious health problem to the inhabitants of the people in the oil bearing communities.[11]Residents of oil producing areas sometimes have to cope with drinking water that contains residual oil even many years after clean-up.[4]All across the Delta, the water and soil have been poisoned with hydrocarbon, heavy metals and other substance.[7,8]

The proportions (87.0%) of the respondents with negative attitude to the effects of oil spillage were consistently higher than those (13%) that had positive attitude and the relationships of the attitude to their health problems were found to be statistically significant ($p< 0.05$).

CONCLUSION

This study has revealed that the Biseni community has suffered severe environmental and socio-economic degradation due to recurrent oil spillage resulting from intensified oil exploration and exploitation activities. Key consequences include the displacement of

residents, involuntary migration, destruction of biodiversity, loss of arable land, pollution of drinking water sources, and serious health implications for local fishermen. Corrosion caused by soil conditions was identified as the primary cause of these spillages, leading to reduced income, increased unemployment, and lack of access to safe water. The majority of respondents also reported the absence of compensation for the destruction of farmland and fishing resources.

The study contributes to the body of knowledge on environmental degradation in oil-producing regions, highlighting the critical need for responsive environmental management and social justice. It emphasizes the urgent necessity for governmental and non-governmental actors to mobilize resources swiftly to mitigate the environmental and human impacts of oil spills. Moreover, it underscores the importance of compensatory mechanisms and ecological restoration efforts to address the long-term consequences of oil-related damage.

In light of these findings, further research should focus on developing community-inclusive frameworks for spill response, ecological assessment, and equitable compensation. A deeper understanding of the coastal ecosystem is essential for evaluating the cumulative impacts of oil spills and guiding sustainable remediation strategies.

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