

Oil Pollution and Wellbeing of Women in Oil-Bearing Communities in Bayelsa State

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Abstract

The paper investigate oil pollution and wellbeing of women in oil-bearing communities in Bayelsa State. Specifically, to determine the relationship between oil pollution and health status of women in oil-bearing communities in Bayelsa State, and to identify the challenges caused by oil pollution on the physical heath of women in oil-bearing communities in Bayelsa State. This study used a mixed-methods approach, combining qualitative and quantitative data sets using exploratory, correlational, and cross-sectional research designs. Four hundred (400) adult women was identified as the study partipants from different oil-bearing communities withing Bayelsa state. Questionnaires, in-depth interviews (IDI), and key informant interviews (KII) were used to gather primary data. Mean, graphs, frequencies, and percentages were the descriptive statistics employed for analysis in the beginning. Statistical Package for the Social Sciences (SPSS) version 24.0 was used to analyze ordinal, interval, and nominal data using inferential statistics such Spearman Rank Correlation Coefficient. The study revealed that that oil contamination has serious negative effects on women's health in areas where oil is present. It delves at the ways in which women seek medical attention. All areas that produce oil should have health outreach programs on a regular basis. These programs should include gynecologists, pediatricians, general practitioners, and other medical experts. This community outreach is an attempt to gauge the general health of the locals and put a stop to the spread of oil-related and communicable illnesses.

Keywords: Oil Pollution, Wellbeing, Women Oil-Bearing, Communities, Physical Health

INTRODUCTION

According to Ejechi (2022), the extraction and production of oil in the Niger Delta area has a devastating effect on the local ecology. In terms of worldwide crude oil output, the United States ranks first (Melissa, 2024), with Libya at the top of the African pack (Chisom, 2024). According to Ejechi (2022), the federal government and a few international corporations are now in charge of extracting crude oil from nine states in the southern region of Nigeria. Decisions on crude oil exploration are therefore largely unaffected by the states that produce the oil and the host communities (Elum, 2016).

Buildings such as access roads, pipelines, oil wells, gas flaring, dredging spoils, and flow stations are frequently erected in close proximity to residences, schools, farms, and communities in the Niger Delta, where petroleum is being explored and extracted (Nriagu, 2011). Environmental degradation, livelihood loss, social unrest, and harm to community well-being are all results of oil extraction procedures including drilling, refining, and transportation, which emit toxic compounds into the air, water, and soil (Elum, 2016). Industrial operations, such as oil extraction, create environmental risks that are like "slow poisons," requiring months or even years to cause sickness and death, according to experts in the field and worldwide organizations (WHO, 2003).

The oil and gas industry in Nigeria is prone to environmental disasters caused by human and technological mistakes, which have both short- and long-term effects on the people who live there (Nriagu, 2011). Seasonal floods transport oil contamination to agricultural regions and residential areas, exacerbating the cumulative impacts of these massive oil spills (Gay et al., 2020). As it is, hundreds of thousands of Niger Deltans are at risk of major health problems due to oil pollution in and around their houses, farms, fishing grounds, and water sources (Nriagu, 2011).

Many things can cause oil to spill in the Niger Delta, including pipeline corrosion, a lack of infrastructure maintenance, wellhead spills or leaks, human mistake, theft of oil, and vandalism (Adeola, 2020). It is still not known how much oil has leaked from the region, but according to Jernelov (2010), it has been between 9 and 13 million barrels, or about 1.5 million tons per year—the equivalent of one Exxon Valdez spill per year for fifty years.

The environmental catastrophe in Bayelsa State is having a devastating effect on people's health and ability to make a living. Some of Africa's most biodiverse ecosystems, including its rivers and mangrove swamps, have been either destroyed or are in jeopardy. The contamination of crops and the high amounts of dangerous heavy metals like chromium, lead, and mercury caused by oil covering farmland has been a major concern for local communities. At the same time, acid rain is helped along by gas flaring, which is a byproduct of petroleum production (Rebecca, 2019).

Residents in oil-producing villages in the Niger Delta have a greater frequency of respiratory ailments compared to non-oil-producing locations in Nigeria, which directly impacts their health and well-being (Moneke et al., 2022). The significant dangers to these populations' health posed by pollution from oil and gas are especially worrisome.

The detrimental impacts of these exploratory operations on oil-producing communities in the Niger Delta are a major topic of investigation at the moment. Local inhabitants have been deprived of resource advantages and have fallen into widespread poverty as a result of environmental deterioration (Elum, 2016). The region has had many episodes of civil upheaval, fueling animosity toward the policies of the federal government (Apata, 2010). The frequency of oil spills has grown over the years, yet stakeholders have done little to nothing to help the areas who have been hit.

Over 9,500 oil spills were recorded in Nigeria between 2011 and 2021, according to Akinpelu (2021), with an estimated 450,000 barrels of oil leaked into the environment.

Asthma, COPD, bronchiolitis, respiratory infections, decreased lung function (particularly in children with asthma), allergic reactions, and symptoms like coughing, wheezing, shortness of breath, eye irritation, and headaches are some of the health effects of oil pollution, according to the Natural Resource Defense Council (2014).

Much of the cropland in these villages is now uncultivable due to the significant ecological damage caused by oil contamination. Increasing soil sterility caused by the loss of soil microorganisms and decreased agricultural yields has pushed many farmers to quit their property, forcing them to seek alternate, sometimes unavailable, livelihoods, as pointed out by Chijioke et al. (2018).

The destruction of these tribes' subsistence economies due to oil contamination is obvious. Polluted drinking water, interrupted farming and fishing, and a fast degrading ecology are all symptoms of the current crisis. The air quality in the area has deteriorated, according to Moneke et al. (2022), and 43% of the population suffers respiratory problems, according to the combined prevalence.

PROBLEM STATEMENT

The presence and actions of oil firms, together with oil spills, may put oil-producing communities through a lot of social, economic, and health hardships. Numerous studies have shown that oil pollution has devastating effects on the health of host community members. These include works by Oghenetega et al. (2022), Moneke et al. (2022), and Nriagu et al. (2016).

For fourteen years, from 2006 to 2020, an oil leak occurred in Bayelsa State every twelve hours, as stated in a report by Daniel (2023). According to the research, 3,508 out of 13,251 spills, or 234 spills each year, occurred in Bayelsa, making it 25% of all spills in Nigeria during that time. The Southern Ijaw, Yenagoa, and Nembe Local Government Areas were the most affected, with 109,940 barrels of oil leaked. Five International Oil Companies (IOCs) were found to be responsible for 88% of this amount.

Udotong et al. (2017) also covered the topic of hydrocarbon pollution and its negative effects on fish health, which can cause them to die off, go extinct, or not reproduce at all. The health of host populations is adversely affected by pollution because it contaminates drinking water sources across the world, including lakes, streams, and rivers (Agoha, 2019). As compared to conventional refining processes, the amount of waste produced by the local crude oil refining process is substantially higher. Discharge of dark sludge into the environment covers large regions and makes the landscape look desolate. Groundwater systems and aquatic ecosystems are affected by oil pollution and its waste, which is dumped in marshes and the vegetation around (Naanen, 2019).

Oil spills are associated with increased blood pressure in host communities, according to a cross-sectional research on the burden of hypertension in settings contaminated with oil and gas conducted by Ezejimofor et al. (2016). Due to sleep deprivation and bad eating habits brought about by the loss of farmlands, crops, and animals due to oil pollution, hypertension was more common among residents in the afflicted areas.

Concerning psychological well-being, Nriagu et al. (2016) brought attention to the fact that inhabitants' anxiety, irritation, and intolerance levels have skyrocketed as a result of oil pollution.

Similarly, studies have shown that the mental health of the host population is significantly impacted by oil exploration operations (Ilevbare, 2019).

While several studies have looked at the dangers of oil pollution to human health, very few have examined how this problem affects women in the area and whether or not they seek medical attention when they are sick. To address that knowledge vacuum, this study will examine the relationship between oil pollution and the health of women in Bayelsa State, as well as their healthcare utilization patterns. The purpose of this research is to learn how women in oil-producing towns deal with health care issues caused by environmental contamination.

AIM AND OBJECTIVE

The main objective of the study is to investigate oil pollution and wellbeing of women in oil-bearing communities in Bayelsa State. While the specific objectives are to;

1. Determine the relationship between oil pollution and health status of women in oil-bearing communities in Bayelsa State.
2. To identify the challenges caused by oil pollution on the physical health of women in oil-bearing communities in Bayelsa State.

RESEARCH QUESTIONS

1. What is the relationship between oil pollution and health status of women in oil bearing communities in Bayelsa State?
3. What is the relationship between the challenges caused by oil pollution on the physical health of women in oil-bearing communities in Bayelsa State?

HYPOTHESES

H₀₁: There is no relationship between oil pollution and women's health status in Bayelsa State.

H₀₂: There is no relationship between the challenges caused by oil pollution on the physical health of woman

CONCEPTUAL REVIEW

Historical Background of Oil Pollution

Significant environmental harm has resulted from the spillage of an estimated 13 million tons of crude oil into the Niger Delta since its discovery in Nigeria (Sam & Zubbey, 2018). A wide range of natural and man-made sources contribute to this pollution. Local soil and water sources can get polluted due to pipeline breaks, unintentional leaks, and improper management at manufacturing facilities (Ojewumi et al., 2017). The dumping of untreated sewage from uncontrolled refineries into adjacent rivers also has a significant negative impact on aquatic habitats and plants. According to research by Kuenzer et al. (2014), the inhabitants of the Niger Delta face the greatest danger from hydrocarbon contamination. The chemical makeup of the oil has changed, making it more poisonous, and if this continues uncontrolled, it might have a devastating effect on saltwater wetland ecosystems, as pointed out by Yabrade and Tanee (2016).

It is essential to educate local communities about environmental risks and possible solutions in order to achieve the United Nations Sustainable Development Goals (SDGs) of "conserving and

sustainably using oceans, seas, and marine resources" and "protecting, restoring, and promoting the sustainable use of terrestrial ecosystems and forest management" (Hasan et al., 2019). The presence of crude oil and petroleum in water systems makes it unfit for human consumption by interfering with the normal processes of aquatic life. Because of the heavy contamination of the marshes and rivers, as well as the destruction of fish habitats in the mangroves of the Niger Delta, these areas are no longer viable for fishing. Nwaejije et al. (2017) found that agricultural production has been negatively impacted due to soil degradation, erosion, and leaching caused by hydrocarbon pollution from nearby refineries. This contamination includes polycyclic aromatic hydrocarbons (PAHs).

There are a lot of environmental rules in Nigeria that should make oil exploration and production safer, but nobody is really making an effort to enforce them (Ibaba, 2017). Elenwo and Urho (2017) note that environmental protection authorities' lack of dedication exacerbates the problem and prevents long-term improvements in conservation efforts. Government underfunding, a lack of operational resources, corruption, and limited professional engagement are the reasons given by Ibaba (2010) for the failure to adequately implement these laws. One major flaw that Orubu et al. (2004) found in their analysis of environmental legislation in Nigeria was that host communities were not included in the planning or execution of environmental management and protection programs. One successful strategy to combat local environmental deterioration, according to Ayeni (2019), is for the community to be involved in environmental policy-making and decision-making. Indigenous peoples have a special bond with the land and water since they have lived off it for so long. This includes rivers, lakes, streams, and the land itself.

Local crude oil refiners in Nigeria are a major economic drain, but that hasn't stopped the government from taking notice (Dominic, 2016). The difficulty is that government actions have often made environmental degradation worse rather than better. According to Pointer (2018), more than a thousand Niger Delta refineries were damaged in September 2017 by the Nigerian Navy. Nkemakolem (2018) reports that in November 2018, a swamp buggy was used to demolish multiple crude oil refineries in the vicinity of the Okarki village in the Ahoda West Local Government Area of Rivers State. Rageh (2014) pointed out that the government's actions, such as dumping refined goods into marshes and rivers and setting camps on fire, add to the environmental degradation in the Niger Delta, even while they try to stop unlawful refining. The Niger Delta has been experiencing elevated soot levels, which the head of the National Oil Spill Detection and Response Agency (NOSDRA) has attributed to the operations of local crude oil refineries (Vanguard, 2018).

History of Crude Oil in Nigeria

Crude oil in Nigeria has a rich history that begins with the discovery of petroleum and continues up to the present day. The Nigerian Bitumen Corporation supervised oil exploration beginning in 1907, long before the 1956 discovery of crude oil in Oloibiri, Bayelsa State, or any of the states in Nigeria became oil producers. But all of that came to a stop when oil exploration was deemed too important to continue during World War.

Whitehall Petroleum and the D'Arcy Exploration Company were both given oil exploration licenses after the war. Nevertheless, both permits were revoked in 1923 because neither firm discovered oil that could be profitably exploited. After ten years, a license to explore for oil across a massive 920,000 square kilometers (357,000 square miles) was granted to the Shell D'Arcy Petroleum Development Company of Nigeria, a joint venture between Shell and British Petroleum (formerly the Anglo-Persian Oil Company).

In 1951, the first test well was dug in Owerri, marking the beginning of serious drilling activities. Not in commercial amounts, but oil was found in 1953 close to Eket, near Akata. There had already been an expenditure of nearly six million pounds on exploration at that point. The Anglo-Persian Oil Company persisted through these early failures and finally found economically viable crude oil near Oloibiri, Bayelsa State, in 1956. Additional discoveries in the subsequent sixty years were made possible by this discovery (Maduawuchi, 2020).

Crude Oil in Bayelsa State

Many of Bayelsa's 2.3 million people call water-accessible settlements home, because to the region's varied topography that includes rivers, marshes, and mangrove swamps. There are eight Local Government Areas (LGAs) in the state, each representing one of three senatorial districts (East, Central, and West) and the majority of the population speaks Izon or a similar language (NBS 2016).

With 5,000 kilometers of pipelines, 232 oil facilities, and 2,616 wells, Bayelsa is an oil producer's paradise. Roughly one-third of the population, or half a million people, reside in close proximity to oil infrastructure (DPR 2019). Bonny in Rivers State and Forcados in Delta State are home to the Shell Petroleum Development Company (SPDC) facilities, which include almost 4,000 km of pipelines and flow lines, 87 flow stations, nine gas plants, more than 1,200 producing wells, and two export terminals. In Brass, there is an oil center, two gas plants, eleven flow stations, and an export terminal run by the Nigerian Agip Oil Company (NAOC). An further 180 km pipeline carries gas to Indorama, while a 460 km pipeline links NAOC's activities to the Brass terminal. On a daily basis in 2019, Bayelsa produced around 290,000 barrels of oil (Offiong, 2019).

In terms of oil production per capita, no state can compare to Bayelsa. This state is responsible for almost fifteen percent of Nigeria's oil fields, since it owns twelve oil mining licenses and four oil prospecting licenses. The Gbarain and Nembe Creek fields are situated in Bayelsa; they are two of the three biggest oil reservoirs in the nation, with a combined capacity of more than 1 billion barrels. Although oil is present in all eight LGAs, Brass, Nembe, Ekeremor, and Southern Ijaw account for the bulk of the state's production (Oxford Business Group 2013).

While the United States has seen a decrease in imports as a result of increased shale oil production, Europe and India continue to be the principal consumers of Bayelsa's oil. In 2020, these exports will account for 75% of Nigeria's total export profits and produce nearly all of the country's hard currency reserves (Adedokun, 2018). The federal government receives a substantial amount of its

money from oil and gas, which accounts for almost half of its tax revenue (Burns et al., 2019). However, this ratio is slowly declining.

Among the states in Nigeria, Bayelsa ranks high in terms of oil production. The state of Bayelsa ranks second in Nigeria for oil production, according to the Investment Promotion Agency. While the Bayelsa State Government disputes the statistics, federal figures from the Derivation Fund Information and the National Bureau of Statistics list Bayelsa as the third-largest producer.

The Concept of Health

The World Health Organization (2012) states that health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." The difficulty of putting this definition into reality is one of the criticisms leveled against it. According to the World Health Organization (2013), a more realistic definition of health is the ability to deal with the inevitable mental, social, and physical stresses that everyone faces. Health as a notion has changed through the years. Health was originally defined as a normal condition that might be temporarily disturbed by disease; early definitions were in accordance with the biological paradigm and centered on the body's functioning capabilities. As an illustration, health was described as "a state characterized by anatomical, physiological, and psychological integrity, with the ability to fulfill valued family, work, and community roles, and manage physical, biological, psychological, and social stressors."

With a more aspirational definition of health that went beyond the simple absence of sickness, the World Health Organization (WHO) shifted its focus in 1984. The significance of "physical, mental, and social well-being" was emphasized in this concept (WHO, 1958). Even while it was considered revolutionary, many turned back to the more realistic biomedical viewpoint since it was too general and hard to quantify. The concept of health evolved in tandem with the change in emphasis from fixed diseases to evolving processes. In the 1980s, the World Health Organization (WHO) spearheaded a change in perspective by recasting health as a resource that can be improved over time rather than a static condition. According to the World Health Organization (1984), health was defined as "the extent to which individuals or groups can realize aspirations, meet needs, and cope with the environment" in the 1984 version. Physical, mental, and social strengths, as well as the ability to bounce back from adversity, were all emphasized by the resource perspective of health. This broadened the definition of health to encompass not only physical but also psychological, emotional, and social resilience, implying that these qualities are pedagogically transferable (WHO, 1984).

The Impact of Oil Pollution on Women's Health Status

Infertility, miscarriages, birth abnormalities, infections of the eyes (which can cause blindness), and other skin diseases are on the rise, and the oil extraction business is likely to blame. Oil pollution has a number of negative effects on host populations' health, including increased rates of appendicitis, weariness, and stomach ache (National Bureau of Standards, 2014). Furthermore, those who live in close proximity to oil fields experience pain and anguish due to the offensive smells and smoke that emanate from these locations. Medical professionals in Melut and Koch

identified several health problems, and a 2014 research by the Catholic Organization for Relief and Development Aid determined that oil sector pollution was positively correlated with them.

Additional data from CORDAID showed that 88.5% of mothers in oil-producing regions had delivered kids with abnormalities. The Ministry of the Environment (2016) cites research out of Colorado that found an increased risk of congenital heart problems and neural tube disorders in babies living in close proximity to oil and gas fields. Exposure to carcinogenic petrochemicals has grown in oil-producing regions due to oil leaks caused by broken pipelines, outdated machinery, or faulty refineries, which are frequently worsened by war.

As a result of incomplete combustion, gas flaring—a practice prevalent in oil fields—releases dangerous chemicals. Benzene, styrene, ethynyl benzene, toluene, xylenes, biphenyl, and fluorine are some of the dangerous hydrocarbons that are released into the air as particles and gasses. World Energy Resources (2017) found that breathing in the tiny particles that are a byproduct of acid precursor gases can cause heart disease, lung disease, asthma, and bronchitis, as well as cardiovascular disease and early mortality.

Challenges of Oil Pollution on the Physical Health of Women

Oil pollution poses significant threats to the physical health of women, particularly in regions heavily affected by petroleum exploration and spills, such as the Niger Delta. Exposure to contaminants from crude oil, including hydrocarbons, heavy metals, and other toxic substances, can severely impact women's health. Women, especially those in rural areas, are often directly involved in activities like farming and fishing, which makes them more vulnerable to contact with polluted water and soil (Oviasuyi & Uwadiae, 2010). Prolonged exposure to oil pollutants is linked to several health problems, including respiratory issues, skin conditions, and reproductive health complications.

One of the critical effects of oil pollution on women's health is related to reproductive disorders. Toxic chemicals such as benzene, toluene, and xylene, present in oil spills, are known to disrupt hormonal functions, leading to menstrual irregularities and complications during pregnancy (Adeola, 2011). These chemicals have teratogenic and carcinogenic effects, potentially causing birth defects and increasing the risk of cancer. The combination of direct exposure to contaminated water sources and the consumption of polluted food also leads to the bioaccumulation of these harmful substances in the body, which exacerbates long-term health impacts.

Additionally, the psychological stress caused by living in an environment marred by oil pollution further aggravates physical health conditions. The loss of livelihoods due to the destruction of farmlands and fishing zones also contributes to malnutrition and weakened immune systems, leaving women more susceptible to infections and diseases (Nriagu et al., 2016). The lack of access to clean water exacerbates this, increasing the prevalence of waterborne diseases, which disproportionately affect women. Hence, oil pollution has multifaceted impacts on women's health, intertwining physical, reproductive, and mental well-being (Ite et al., 2013).

THEORETICAL FRAMEWORK

Risk Perception Theory

Slovic first proposed the Risk Perception Theory in 1987. This term describes how people personally assess potential dangers to their health or the environment. According to Sjöberg, Moen, and Rundmo (2004), our perception of risk takes into account both the probability and the possible repercussions of a poor result. When it comes to health, these views matter for the general welfare of an individual or group. Based on the perceived amount of threat, risk perception can range from high to low and be either optimistic or pessimistic (Sjöberg et al., 2004). Cultural and social elements, which represent the beliefs, symbols, history, and ideology of a group, might influence how people perceive risks (Sjöberg et al., 2004). Ajiboye and Adebayo (2012) noted that different groups and nations have different risk perceptions due to factors such as public discourse, cultural norms, present situations, and the legal and technological means available for risk control and management.

EMPIRICAL REVIEW

The effects of oil pollution on the health of mothers and their newborns were studied by Oghenetega et al. (2020). The study used in-depth interviews (IDIs) and focus groups (FGDs) with people from oil-producing villages to describe their experiences. According to the results, cultural ideas, individual experiences, environmental variables, and hospital characteristics all have a role in shaping how women and healthcare providers perceive oil pollution and its effects on maternal and newborn health. The study did not, however, look at how oil contamination affects women's health in general.

The potential dangers of oil spills to local populations in the Niger Delta were investigated by Jerome et al. (2016). Pipeline explosions, oil spill fires, and gas flares were among the threats that caused mental discomfort, according to the research. Some of the health hazards that participants reported included: headaches (96%), watery eyes (81%), sore throats (80%), respiratory troubles (64-83%), itchy skin (84%), rashes (78%), and gastrointestinal symptoms such as nausea (70%), diarrhea (74%), and vomiting (74%). Risk perceptions and health outcomes were significantly influenced by emotional reactions and contextual elements, including visual and chemosensory signals.

METHODOLOGY

Bayelsa is a state in central Nigeria, in the South-South area, right in the middle of the Niger Delta. It is one of the most recent states to be formed, having been separated from Rivers State in 1996. In addition to the Atlantic Ocean defining its southern boundary, the Niger River (about 17 km) and the Forçados River (roughly 198 km) divide the capital city Yenagoa from Rivers State to the east and Delta State to the north, respectively, and the city experiences annual floods. The eight LGAs that make up Bayelsa are as follows: Ekeremor, Kolokuma/Opukuma, Yenagoa, Nembe, Ogbia, Sagbama, South Ijaw, and Brass.

This study used a mixed-methods approach, combining qualitative and quantitative data sets using exploratory, correlational, and cross-sectional research designs. Researchers in Bayelsa State used

a correlational approach to look at how oil pollution affected women's health-seeking habits in oil-producing towns.

All women residing in oil-producing villages within Bayelsa State are considered part of the study population, with an emphasis on women residing in regions impacted by oil pollution. Because 18 is often seen as the age of majority, we specifically sought for ladies who were 18 years old and older. The original sample size for this study was 400, however an extra 40 participants were added to account for a 10% attrition rate, for a total of 440. To make up for any incomplete or incorrect surveys, this increment was made, and multistage sampling technique was adopted to distribute the sample across the 8 LGAs.

Questionnaires, in-depth interviews (IDI), and key informant interviews (KII) were used to gather primary data. Mean, graphs, frequencies, and percentages were the descriptive statistics employed for analysis in the beginning. Statistical Package for the Social Sciences (SPSS) version 24.0 was used to analyze ordinal, interval, and nominal data using inferential statistics such Spearman Rank Correlation Coefficient.

ANALYSIS, RESULTS AND DISCUSSIONS

Relationship Between Oil Pollution on the Health Status of Women

Many communities in the region suffer oil pollution in both similar and unusual ways, according to an inquiry into the relationship between oil pollution and the status of women in Bayelsa State. Contributing to this pollution are a number of activities, some of which are executed by licensed oil firms and others by local, indigenous refineries. Pollutants are released into the air during gas flaring, crude oil drilling, extraction, pipeline transit, and local refineries. A number of respondents pointed to these actions as the main reasons why their towns were contaminated by oil. On top of that, a few people have mentioned that crude oil is frequently visible on local rivers, even in places where none of that has happened. An individual claims that the SHELL oil corporation conducts crude oil activities in this region. Identified as a 45-year-old farmer from Ofoni, they utilize pipes that are buried underground to link the crude oil source and transfer it to their preferred destinations.

Health Challenge of Oil Pollution on the Health Status of Women

The community's oil-related activities are associated with the health risks caused by oil pollution, and these risks disproportionately affect women..

i. Gas Flaring:

The practice of burning off excess natural gas during oil production is known as gas flaring. Byproducts include benzene, particulates, nitrogen oxides, heavy metals, black carbon, and carbon monoxide; it is a major source of oil pollution. Sulfur dioxide, methane, and other sulfur compounds can be released during flaring, which can exacerbate respiratory diseases including asthma (Blundell et al., 2022). Gas flaring has been associated with a number of health problems, including increased core body temperature, irritation of the eyes from soot emissions, and skin

rashes from contact with soot-contaminated rainfall. Rainwater is no longer safe to drink due to acid rain, which is another consequence of gas flaring. On occasion, participants reported that black material would obstruct their nasal passages.

One Gbarantoru citizen, who is 63 years old, spoke about the health risks associated with gas flaring. Even though they no longer utilize the area, there remains a fenced-off section behind my house where oil was burned. It would get so hot that the whole town would have to leave while they burned the oil. The smothering heat from the oil fire was especially noticeable since it was so near, and I felt it keenly. I frequently noticed black leftovers falling on rooftops and the ground, as well as smoke rising into the air from the burning things. Also, the gas flaring from the next town is making the air we breathe unhealthy, and the rainwater we collect isn't safe to drink.

Oil spills cause cancer and other serious health problems. No longer can we rely on rainwater due to the gas flaring in this region. Itchy, rashy skin is the result of bathing in rainfall. Also, when we send our kids to the doctor, they tell us not to use rainwater for baths since it causes rashes. Because it makes us sick to our stomachs, we can't even use it in cooking or drinking. Gbarantoru resident; 50 years old; instructor.

A Gbarantoru village lady echoed the earlier speakers' concerns, saying that gas flaring's toxic fumes and chemicals might cause cancer if breathed in. According to her, "One of the health issues related to gas flaring is cancer, which is caused by inhaling harmful chemicals from the gas flare in the area." (IDI/Gbarantoru/48 years).

An official from the Gbarantoru health center made the following statement: "The gas flaring from the neighboring community releases substances into the air known as soot, which can lead to various health issues, including heat sensation, skin irritation, eye irritation, cough, asthma, and respiratory problems." I am a 47-year-old nurse.

ii. Oil Extraction:

Oil extraction also adds to oil pollution, according to further research. An interviewee said that it is possible for the oil that is subsurface to rise and pollute the water when rivers are dug up to produce crude oil. Because they are forced to swim farther from land and into deeper water, marine life becomes more elusive as a result of the crude oil spill. Additionally, it causes aquatic life in contaminated places to die off, and occasionally, people in the neighborhood may pick up dead fish and consume them for food. There are significant health concerns associated with eating certain types of fish. An individual mentioned that oil production is causing pollution in their neighborhood, notably mentioning that they frequently see a reddish material floating on their river. It is possible that the crude oil in the water will prevent us from catching anything at all on certain fishing trips. Unaware of the potential contamination, we will bring home any dead fish that looks tasty if we happen to come across it floating. Eating such fish might occasionally lead to food illness. Ikarama, a fishing woman from IDI, was involved in a case in 2024.

In a key informant interview, a doctor from the Ikarama village corroborated the earlier assertion that ingesting oil-polluted fish might cause food sickness, lending credence to the accusations made. She went on to say, "It's obvious that oil extraction offshore (in the river) is a common practice in this area, but the process itself is harmful to our aquatic life." Toxic compounds called

polycyclic aromatic hydrocarbons (PAHs) can build up in the bodies of deceased fish that have been swimming in polluted water. Ingesting these compounds can lead to gastrointestinal problems, vomiting, and nausea, and in rare instances, more serious diseases including cancer. Do not consume any fish that has been found dead in water that is tainted with oil. I am a health practitioner of 53 years of age from the Ikarama village in 2024, reporting as KII.

i. *Drilling:*

Crude oil is extracted from reservoirs, which are subsurface rock formations, by means of drilling. A drilling rig and other specialized equipment are usually used to create a deep well in the reservoir during this operation. Drilling for crude oil, according to some participants, creates substantial ground vibrations, which in turn cause a number of problems, including health issues. Recurring headaches and extreme tiredness are among the health effects that individuals have reported.

An Imiringi farmer who was questioned regarding the health impacts of oil pollution corroborated this discovery by saying that the loud noises produced during drilling might lead to headaches and agitation. She said that the drilling equipment's loudness made her sick to her stomach and left her feeling exhausted all the time. Drilling causes headaches, which is a serious health problem. (44 years old/trader/Imiringi).

A second respondent shared this view, saying that the disorientation and pain medicine she needs to deal with the drilling sounds force her to leave the house on occasion. She revealed, "Whenever the drilling starts in my neighborhood, which is rather close to my home, I try to see my elder sister in Yenagoa for a respite every three to five days. Because of the vibrations under the earth, I frequently suffer from chronic headaches and bodily aches. (farmer from Ikarama, 34 years old). Listed below are a few diseases and their respective causes, according to the National Resource Defense Council (2014).

Table 4.1 Health Impact of Oil Pollution

| Pollution | Illnesses |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water oil Spillage | Cancer, (biliary tract cancer, blood and lymphatic cancers, lung cancers in women and soft tissue cancer, diarrhea. |
| Oil extraction and transportation | Headaches, nausea, respiratory problem |
| Refinery Emission | Cancer, respiratory issues, Asthma, cardiovascular illness, developmental delay etc. |
| Pollution in water by Benzo (a) Pyrene | Cancer, genetic damage, reproductive impacts birth defects and organ damage |
| Air pollution (Polycyclic, aromatic hydrocarbons (PAHS) | Nausea, headache, skin rashes, memory loss, joint pain, exhaustion respiratory problems, eye and throat irritation, coughing, respiratory tract problems and premature death |

Source: NRDC (2014)

Here are the descriptive data from the survey on how people in Bayelsa State think oil pollution has affected women's health (Table 4.2). According to the statistics, gas flaring and drilling are the main activities that cause oil pollution, accounting for 24.6% and 24.8% of the total, respectively. Local refineries are shown to be the least major source, accounting for 13.8%. Regarding oil spills, 96.2% of those who took the survey said they've seen one in their town, while 3.8% said they've never seen one. Also, while 24.8% of people claimed they do not regularly face oil spills, 60.1% of people stated they encounter them often. Oil spills are also not common, with 8.2% of respondents saying they seldom encounter them and 3.1% saying they happen frequently.

Accidental leaks and vandalism were named by 34% of respondents as the most prevalent causes of oil spills, while professional errors were named the least often at 4.9%. Concerning the consequences of oil spills on people's ability to make a living, a sizeable minority reported extremely low effects (4.9%), while a large majority indicated moderate effects (42.6%). The pollution of rivers (49.4% of respondents) and harm to farmlands (32.2%) were also named as the primary environmental effects of oil spills.

The majority of respondents (36.1% to be exact) identified AGIP as the oil firm in their towns, whereas 63.9% named Shell Oil firm as the most prominent oil business in Bayelsa State (Table 4.3). Sixty-24 percent of women surveyed rated their health as extremely poor, 32.5 percent as not very healthy, and 4.6 percent as good. Oil extraction was named by 41.4% of respondents as the most harmful source of oil pollution to women's health, while local refineries were named by 10.7% as the least harmful.

Table 4.2 Relationship Between Oil Pollution and The Status of Women

| Variables | Frequency (391) | Percentage (100%) |
|--------------------------------------------------------|----------------------------|------------------------------|
| Oil exploration activities that leads to oil pollution | | |
| Transportation | 85 | 21.7 |
| Gas flaring | 96 | 24.6 |
| Local refinery | 54 | 13.8 |
| Oil extraction | 59 | 15.1 |
| Drilling | 97 | 24.8 |
| Do you experience oil spillage in your area? | | |
| Yes | 376 | 96.2 |
| No | 15 | 3.8 |
| How often do you experience the oil spillage? | | |
| Very often | 12 | 3.1 |
| Often | 235 | 60.1 |
| Not often | 97 | 24.8 |
| Not very often | 32 | 8.2 |
| Causes of the spillage | | |
| Pipeline | 38 | 9.7 |
| Accidental leakages | 133 | 34 |
| Mistake from unprofessional | 19 | 4.9 |
| Vandalization | 128 | 32.7 |

| | | |
|------------------------------------------------------------------------------|-----|------|
| Theft | 58 | 14.8 |
| Effect of oil spillage on livelihood | | |
| Very high | - | - |
| High | 190 | 48.6 |
| Low | 167 | 42.7 |
| Very low | 19 | 4.9 |
| How does the spillage affect the natural environment? | | |
| Destroying farmlands | 126 | 32.2 |
| Contaminating rivers | 193 | 49.4 |
| Destroying medicinal herbs | 57 | 14.6 |
| Oil company in charge | | |
| SHELL | 250 | 63.9 |
| AGIP | 141 | 36.1 |
| General health status of women | | |
| Very healthy | 2 | 0.5 |
| Healthy | 18 | 4.6 |
| Not very healthy | 127 | 32.5 |
| Very poor | 244 | 62.4 |
| Which of the causes of oil pollution affects women's health the most? | | |
| Gas flaring | 91 | 23.3 |
| Local refineries | 42 | 10.7 |
| Oil extraction | 162 | 41.4 |
| Drilling | 96 | 24.6 |

Source: Survey Data (2024)

Figure 4.1 shows the causes of oil spillage in the communities in Bayelsa State, high percentage of the respondents reported that the major cause of the oil spillage are accidental leakages (34%) and vandalization, while the least cause of oil spillage reported by respondents is mistake from professionals (4.9%).

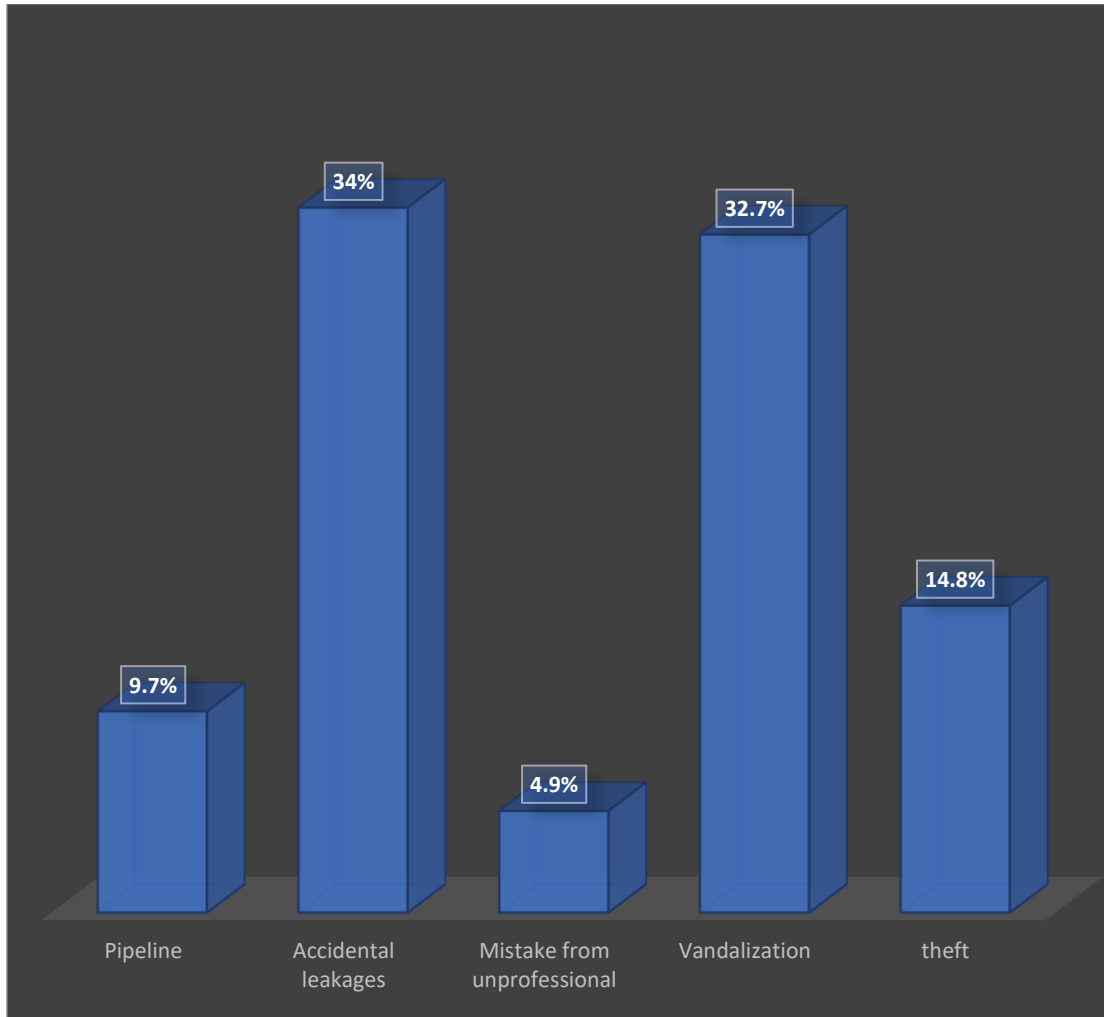


Figure 4.1 Causes of Oil Spillage
Source: Survey Data (2024)

The National Oil Spill Detection and Response Agency (2024) provided statistics on the number of oil spills and their causes from April 2023 to December 2023, which may be seen in Figure 4.2. According to the data, out of 150 occurrences that occurred during this time, sabotage and theft were the main causes of oil leaks.

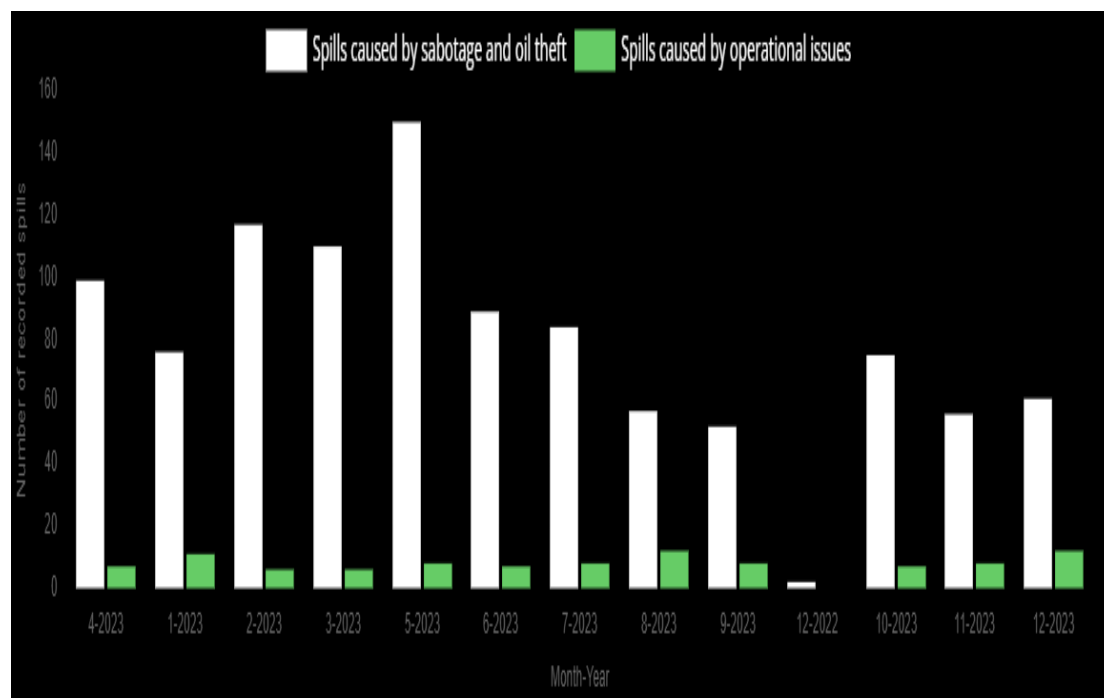


Fig.4.2 Number of Oil Spill by Reported Cause (2023)

Source: NOSDRA (National Oil Spill Detection and Response Agency 2024)

Relationship Between Oil Pollution and Women’s Health Status in Bayelsa State

The results of the link between the health condition of women and oil pollution in localities of Bayelsa State that have oil reserves. The direction and intensity of the association between these variables may be measured by the correlation coefficient, which uses Spearman's rho. An association between oil pollution and women's health in these localities is relatively robust, according to Spearman's rho value of .559**. With a p-value of .000, significantly lower than the conventional .05 criterion, we may say that this association is indeed statistically significant. Based on the study population, the most common reasons for oil spills in Bayelsa State are accidental leakages (34% of the total) and vandalism (34% of the total). Ojewumi et al. (2018) found that pipeline ruptures, unintentional leaks, and inappropriate handling at production facilities are the main causes of spills. Our findings are in accord with theirs. It backs up the point made by Sam et al. (2018) that pollution can be attributed to both natural and human-made sources. Respondents' main professions, such as farming and fishing, are adversely affected by oil pollution, as indicated by the substantial consequences of oil spills on their livelihoods (48.6%).

Correlation Result Between Oil Pollution and General Health Status of Women

| | | Oil Pollution | General Health Status of women |
|--------------------------------|-------------------------|---------------|--------------------------------|
| Spearman's rho | Oil Pollution | 1.000 | .559** |
| | Correlation Coefficient | | |
| | Sig. (2-tailed) | . | .000 |
| | N | 376 | 376 |
| General Health Status of women | Oil Pollution | .559** | 1.000 |
| | Correlation Coefficient | | |
| | Sig. (2-tailed) | .000 | . |
| | N | 376 | 391 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output, 2024

Relationship Between the Challenges Caused By Oil Pollution on the Physical Health of Woman

The results of the link between the challenges caused by oil pollution on the physical health of woman in localities of Bayelsa State that have oil reserves. The direction and intensity of the association between these variables may be measured by the correlation coefficient, which uses Spearman's rho. An association between oil pollution and women's health in these localities is relatively robust, according to Spearman's rho value of .621**. With a p-value of .000, significantly lower than the conventional .05 criterion, we may say that this association is indeed statistically significant. Oil pollution has made it harder for women to make ends meet; many of these women depend on fishing, farming, and mangrove plants for their livelihood (Jackson and Zibima, 2019). Soil degradation, leaching, and erosion are ways in which hydrocarbons—specifically polycyclic aromatic hydrocarbons—released by nearby crude oil refineries have a negative impact on agricultural output, according to Nwaejije et al. (2017).

Correlation Result Between Oil Pollution and General Health Status of Women

| | | Oil Pollution | General Health Status of women |
|--------------------------------|-------------------------|---------------|--------------------------------|
| Oil Pollution | Correlation Coefficient | 1.000 | .621** |
| | Sig. (2-tailed) | . | .000 |
| Spearman's rho | N | 376 | 376 |
| | Correlation Coefficient | .621** | 1.000 |
| General Health Status of women | Sig. (2-tailed) | .000 | . |
| | N | 376 | 391 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Output, 2024

CONCLUSION

The study shows that oil contamination has serious negative effects on women's health in areas where oil is present. It delves at the ways in which women seek medical attention. Cancer, rashes, infections, diarrhea from polluted water, eye irritation, respiratory problems, and many more are among the major health hazards that women in these areas face due to oil pollution. It is normal for people to self-medicate when using traditional medicine. But when such methods don't work and the disease becomes worse, women resort to mainstream care. It should be mentioned that the utilization of traditional and self-medication methods is frequently influenced by factors such as lack of funds and travel time to healthcare providers, rather than personal choice. Crude oil is still used by women in these regions to cure nerve pain, convulsions, stomachaches, and womb discomfort, even though it is damaging to their health. Aside from obtaining cash compensation from the accountable oil firms, women also manage the health risks associated with oil pollution. In some regions, they are also given social amenities like free education for their children and regular power.

RECOMMENDATIONS

From the findings of this study, the following recommendations are given;

1. All areas that produce oil should have health outreach programs on a regular basis. These programs should include gynecologists, pediatricians, general practitioners, and other medical experts. This community outreach is an attempt to gauge the general health of the locals and put a stop to the spread of oil-related and communicable illnesses.
2. Oil operating companies relocating from populated locations to less populated ones: The health and livelihoods of women in areas where oil corporations operate are severely

affected, according to their complaints. It is critical to move these activities to places without people in order to ensure the safety of the ladies and other inhabitants in these areas.

3. Establishing health facilities in strategically placed areas inside each of the communities that produce oil: According to the research, some locals don't seek out conventional medical care since they live too far from the nearest health center. Gbarantoru is one of those places where the health center is quite a ways off from the heart of town. Health facilities should be established in each community's most populous locations by oil firms that benefit from the community's crude oil.

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