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RESEARCH ARTICLE

Assessing the Socio-Economic and Environmental Impact of *Kpofire* Syndrome in Niger Delta Communities

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Abstract
The research studied the impact of *kpofire* syndrome on the socio-economic and environmental situation of selected Kolo Creek communities (KCCs) in Bayelsa State, Nigeria to highlight its ignitable status and how it can best be communicated to the inhabitants as well as the larger society through local media channels for possible remediation. Employing Everett Rogers' Diffusion of Innovation Theory (DIT), the paper used mixed research methods of the historical-analytic, key person interview (KPI), and survey to gather relevant data. Fifty (50) respondents were randomly selected and administered with copies of

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questionnaire using Likert Scale in the Kolo Creek communities of Imiringi, Emeyal 1, Emeyal 11, Emeyal III, Elebele, and Otuasega. The study unfurled *kpofire* historically as a concept that came into existence as a result of the actions of artisanal refiners identified as 'creek dwellers' who illegally refined crude oil into petrol and left in its wake carcinogenic hydrocarbon soot in the air that endangered flora and fauna in the ecosystem. The *kpofire* syndrome has subjected the people of the KCCs under investigation to serious health issues, poverty, underdevelopment, and socio-economic losses over the years despite efforts by well-meaning private and government agencies to nip it in the bud. The study found that *kpofire* was a lucrative business for the 'creek dwellers' but had negatively affected the people of Kolo Creek communities. Consequently, it recommended a genuine collaborative effort by all stakeholders to checkmate the nefarious *kpofire* syndrome. In doing this, relevant legislation, advocacy, and training should be designed and implemented by concerned authorities to allow for modular refining. This would empower and enlighten the illegal refiners to become responsible business people and, in turn, contribute to the socio-economic wellbeing of the KCCs and guarantee a sustainable environment and living.

Introduction

Artisanal refining or illegal fuel refining, otherwise known as *kpofire*, is the process of boiling crude oil and collecting the fumes that are produced. These fumes are then condensed in tanks and used locally for fuel, lighting, and transportation (Suku et al. 2013 cited in Piety et al. 2024). It also refers to the illegal and environmentally harmful practices of refining stolen crude oil in makeshift, unregulated refineries scattered throughout the Niger Delta region of Nigeria (Glory FM, Bayelsa, 2024). Another source writes that it is the name creek dwellers have given to illegally refined diesel, petrol and kerosene (sweetcrudereports.com).

This practice is part of the broader issue of oil theft and sabotage of pipelines which has plagued the region for decades. *Kpofire* despite its economic benefits to the operators has wreaked profound socio-economic and environmental havoc on Niger Delta communities, including increased health risk, ecological devastation, and diminished livelihood (Piety et al., 2024). These devastating effects is referred to in this study as *kpofire* syndrome. While

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studies have identified *kpofire* as a recurrent problem in the Niger Delta, some others see it as a profiteering venture. Niger Delta is one of the most oil-rich regions in Nigeria and plays a crucial role in the country's economy due to its possession of vast mineral resources (Onuh et al. 2021). In addition to *kpofire* syndrome, the region has suffered from environmental degradation, pollution, and lack of economic development occasioned by the oil exploratory activities of multinational corporations operating in the region (Anejionu et al., 2015; Ewim et al., 2023). The oil companies' activities have led to widespread dissatisfaction and unrest among the region's inhabitants. The lack of adequate infrastructure, job opportunities and the perceived unfair distribution of oil wealth has fuelled conflicts among local communities.

According to Adeyemi (2010), conflicts that are motivated by natural resources particularly crude oil or black gold become more resilient. Raimi and Asamaowei (2019) on their part posit that economic conflicts that are motivated by natural resources, particularly those that are stoked by years of one class being marginalized by another, are more likely to be socially vehement than others. The idea of marginalizing the oil producing communities over the years may have formed the basis of the indigenous peoples' resentment as both the oil companies and the governments have paid little or no attention to the plights of the region. This and other salient issues have been the reasons why the International Centre for Peace Initiatives (2009) cited in Raimi and Asamaowei (2019) harped on proper management and equitable distribution of the gains of exploration activities. It observes that:

> Among the key economic factors identified as a trigger of conflict is the management between the gains associated with the exploitation of natural resources, especially by International Oil Corporations (IOCs) and the human development realities of host communities in terms of poverty and unemployment. (129)

Mismanagement of the proceeds of oil exploration by the operators no doubt resulted in years of suffering, poverty, hunger and deprivation in the region. This neglect and mismanagement of oil resources propelled the people's decision to engage in all kinds of illegal activities such as *kpofire*, among others, as a means of survival. Ignorant of the risks associated with *kpofire* activities or rather the insensitivity on the part of the key players; the illegal business has thrived in the region uninterruptedly for decades. *Kpofire* poses significant challenges to the socio-economic wellbeing of communities residing in the KCCs of Bayelsa State, Nigeria. These challenges often lead to various conflicting issues such as competition for control of land and resources, resulting in clashes between communities and illegal refiners. Others include human rights violations, confrontations between government security forces and militant groups involved in illegal refining as well as creating social tensions among communities. Addressing these conflicts, therefore, requires a

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comprehensive approach that involves not only the government, local communities and other stakeholders but also effective communication channels to drive home the health and socio-economic implications of *kpofire* and to ensure environmental sustainability, social justice and economic development in the Niger Delta region. Some scholars such as Daminabo et al. (2017) have attempted to articulate the idea of artisanal refining (*kpofire)* along with the methods and tools used in its refinement. Gilber (2015) cited by Onuh et al. (2021) posits that:

> Artisanal refining of crude oil involves the processing of illegally tapped crude oil in bushes (forests) using local technology, resources and skills. Most of the stolen crude used in illegal refining comes from makeshift artisanal refineries across the Niger Delta region, usually hidden in oil-soaked clearings and operated by thousands of jobless youths. (pp. 6-7)

The concept of *kpofire* presents serious socio-economic and health problems to the inhabitants of the Kolo Creek communities due to unregulated illegal oil refining activities going on in the area which have deprived them of revenue generation that would have been channelled to developing the area. Also, people tend to engage in *kpofire* business because of the quick financial benefits regardless of the economic loss to the authorities and danger to humans, animals, aquatic life and the environment. The emission of black smoke known as 'soot' into the environment causes serious health hazards and often leads to death (Yabrade (2016) cited in Piety et al. (2024). According to Piety et al. (2024):

> Recent research indicates that the long-term impact of these emissions extends beyond immediate health concerns, contributing to chronic diseases and potential genetic mutations over time. The cumulative effect of continuous exposure to such pollutants can overwhelm the immune system and compromise the overall wellbeing of affected communities. (p.2)

Kpofire, poses significant challenges to the socio-economic wellbeing of communities residing in the Kolo Creek area of Bayelsa State, Nigeria. This illegal oil refining not only affects the health of individuals but also has far-reaching consequences on their livelihoods, economies, health and overall social wellbeing. However, awareness-shaping and critical understanding of the syndrome's impact remains under-explored and under-researched. Such a situation can hinder effective response and support systems for the indigenous people living in such communities. Therefore, it is crucial to communicate the socio-economic ramifications of *kpofire* syndrome to raise awareness, promote intervention strategies, and foster community resilience. To initiate effective communication regarding the impact of *kpofire*, a comprehensive understanding of the syndrome's contextual background, prevalence, and associated consequences is necessary. Bayelsa State, located in the Niger Delta region, faces various health and environmental challenges due to its oil-rich status

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(Ajugwo & Egbiye, 2019). Among these challenges, *kpofire* has emerged as a pervasive concern. The negative effects of *kpofire syndrome* have become a burning issue that calls for great concern as the Kolo Creek communities and the entire region have lost lives and properties to this menace. To effectively create awareness of the negative effects of the *syndrome* requires the use of traditional means of communication (town crier). Historically, town criers have played an important role in the spread of information among communities, relaying messages through vocal announcements. They would frequently ring a bell or utilize other instruments such as a gong (ibome) to draw attention before delivering their message(s) loudly for all to hear. They play a vital role in the dissemination of information across the various Kolo Creek communities, enabling the sharing of knowledge, fostering collaboration, and driving communities' successes. Corroborating this, Staff (2024) contends that:

> Effective communication is the process of exchanging ideas, thoughts, opinions, knowledge, and data so that the message is received and understood with clarity and purpose. When we communicate effectively, both the sender and the receiver feel satisfied. Communication occurs in many forms including verbal and non-verbal, written, visual, and listening. (p.1)

The emphasis here is on the clarity of the message to ensure that the intended audience understands it, enabling them to act on the message and produce the required result or feedback. Similarly, Smith and Johnson (2018) argue that clear communication among healthcare team members is necessary for coordinating care and keeping all stakeholders informed about a patient's treatment plan and progress. *Kpofire* has been identified as a serious issue with its consequences ranging from economic deprivations to health hazards. However, it remains uncertain whether those most affected by illegal oil refining are aware of its implications for their health and socio-economic well-being. Smith and Johnson (2018) further claim that *kpofire* is characterized by a range of physical symptoms, such as inflammation and pain, and psychological symptoms including anxiety and depression. Also, there are respiratory issues such as skin rashes, inflammation, pain, anxiety, depression, and more caused by exposure to hazardous chemicals found in oil spillage and pollution within the Kolo Creek communities (Omuire, Vurayai & Omusoro, 2017). As fishing and farming are primary income sources in these communities, the impact of *kpofire syndrome* extends beyond health, affecting the economic viability of individuals and households.

Effective communication, plays a crucial role in raising awareness, influencing public opinion, and mobilizing support for communities affected by *kpofire*. Sharing information about the socio-economic effects of *kpofire* is vital for comprehensively addressing its consequences. The communication process involves conveying the complex interconnections between health, socio-economic activities, and the overall well-being of indigenous communities.

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Understanding the socio-economic impact of *kpofire* on the selected KCCs requires comprehensive research. This research should examine the disruptions to the local economy, such as reduced farming productivity, challenges in fishing, limited trading opportunities, and increased healthcare costs (Ajibade, Omiunu & Fabunmi, 2019). Clear communication of the study's findings is essential to facilitate evidence-based decision-making, policy formulation, resource allocation and targeted interventions to support community development. The study fills knowledge, research, and communication gaps in KCCs."

This study aims to bridge both the communication and knowledge gaps surrounding the socio-economic impacts of *kpofire* syndrome in selected communities. While prior studies by Amadi et al. (2022), Chukwu (2024), Ewauma (2024), Daminabo et al. (2017), Ogbebor and Aghoghovwia (2015) have addressed education on *kpofire* effects, this study bridges the gap in localized communication strategies for KCCs using traditional media as well as addresses both the research gap in KCC-specific impacts and the communication gap in disseminating findings via local channels. By disseminating evidence-based information, stakeholders, including government agencies, public health practitioners, and community leaders, can understand the situation's urgency and gravity. It is hoped that this understanding will inform targeted interventions like modular refineries, policy reforms, and resource mobilization efforts, thereby enhancing the affected communities' resilience and improving overall socio-economic well-being.

Review of Related Literature

Several literatures exist on the impact of *kpofire* activities in the Niger Delta. According to Efenakpo et al. (2018) cited in Flourizel, Ahulimen and Weapngong (2024) the effect of *kpofire* in the Niger Delta is enormous and pervasive, affecting biological, social (militancy, migration, environmental refugees), and economic (nutritional deficiency, food shortages, destruction of traditional means of livelihood) aspects of both humans and the ecosystem. *Kpofire* activities have some negative impacts on the environment by contaminating the air, water, and soil as well as plants, fish, and animals, which can have detrimental effects on human health if ingested or consumed. Citing Douglas (2018), they go on to say that one of the main negative effects of *kpofire* syndrome and oil pollution is the depletion of biodiversity and destruction of the environment, which is mostly caused by topsoil degradation (Flourizel et al., 2024). One of the biggest environmental problems in the Niger Delta is soil pollution from crude oil and its by-products, which is caused by *kpofire*. The traditional local economic support systems of agricultural and fishing areas in the area are destroyed as a result of oil pollution. In addition to preventing aeration by accumulating a layer on the topsoil, *kpofire* activities pollute soils by killing microorganisms, macro and micro fungi, and other soil organisms that enriches the biodiversity.

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According to Okonkwo (2014), cited by Bashir (2021), oil spills have a complex socio-economic impact and also a major factor in terrorism in Nigeria and the Niger Delta region. The socio-economic impacts of oil spills have been extensively studied to include rape, prostitution, destruction of communities, destruction of farm lands, disruption of traditional institutions and cultural values, conflicts, destruction of spirituality and cultural avatars, forced migration, environmental refugee issues, and forced relocation. Famine and food shortages, the loss of traditional means of subsistence and unemployment, harm to wildlife and fisheries, vandalism of oil facilities, abduction, and terrorism are additional problems prevalent in the region. Although these socio-economic effects are obvious, the laws currently in place do little to address them. Violence and a markedly detrimental effect on the economy and people's social well-being are the outcomes. In their study of the health and environmental effects of *kpofire* in the Niger Delta, Amadi et al. (2022) emphasized the pressing need for action to reduce soot production and address its consequences. Constant exposure to soot poses serious health and environmental hazards, according to the research. They can cause lung or heart diseases, as well as cancers of the skin, oesophagus, and bladder. The increase in the release of this residue into the soil environment can disrupt ecological balance, since it is capable of killing soil microorganisms and these organisms are essential for maintaining ecosystem health.

Onwuna et al. (2022) examined air quality at artisanal crude oil refinery sites in Igia-Ama, part of the Kalabari-speaking ethnicity of the Tombia Kingdom of Rivers State, Nigeria. Their findings show that the concentrations of NOx and SOx exceeded the set limit by the Federal Ministry of Environment. Air quality assessment was carried out to determine the concentrations of NOx, VOC, CH4, CO, CO2, O3, PM 1, PM 2.5, PM 4, PM 7, PM 10, TSP, SOx, NH3, H2S, relative humidity and noise level in the study area. The results showed that SOx and NOx concentrations for impacted sites for both dry and wet seasons were above the pristine environment (control site) and the Federal Ministry of Environment (FMEnv) limits (Amadi et al., 2022). The results also showed that SOx and NOx concentrations were higher in the polluted site during the dry season compared to the wet season. SOx and NOx are among criteria air pollutants associated with the formation of acid rain (Amadi et al., 2022). Concern for these gases (SOx and NOx) and other air pollutants such as O3, particulate matter and CO, is that they can be dispersed far beyond their source due to diffusion, and can be inhaled or deposited on biota, with potential to cause severe physiological impairments and diseases. The study revealed the presence of allergenic and pathogenic microorganisms that could pose a danger to public health.

Douglas (2018) investigated how soil fungi, which play crucial roles in maintaining environmental balance, were affected by illegally refined crude oil *(kpofire*) residue. The decomposition and metabolic processes of essential soil organisms are hampered by the ongoing release of crude oil residue into the terrestrial environment. Douglas (2018) discovered that over time, the diversity and population of fungal species declined as the

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concentration of illegally refined crude oil deposits in soil increased. This pollution will upset the ecological balance if it is not reduced. In the views of Oyadongha (2021), *Kpofire* is a local oil processing technique that involves heating crude in a specially constructed oven to extract petroleum products, with the leftovers being released into the environment with no consideration for the effects on the environment. He further notes that it is not environmentally friendly for security personnel to burn stolen crude and for contractors to set fire to sites affected by crude oil under the pretence of clean-up. Citing Inenyo Esinte's report, "Hydrocarbon and Black Soot Air Pollution in Yenagoa and Environs: A Looming Epidemic," he listed a number of health effects, including exacerbation of asthma, lung cancer, chronic bronchitis, chronic obstructive pulmonary disease (COPD), allergies, respiratory tract irritation (cough, catarrh, tearing), and irritation of the eyes and skin.

Air, water, and soil pollution, as well as contamination of plants, fish, and animals, all have an impact on the environment and can have negative health effects after human consumption. Oyadongha warns that in order to prevent this impending epidemic from blowing up and getting out of control, immediate attention and action are needed to address the health, environmental, economic, and social effects of air pollution caused by hydrocarbons and black soot (2021). He reiterated that “black soot air pollution is a ticking time bomb waiting to explode on all of us soonest, this is the time to face reality.” Thus, he recommends “a multi-sectorial, multi-disciplinary and collective approach in proffering solution to this evolving epidemic” (Oyadongha, 2021). Niger Delta’s illegal refining has been extensively researched but there is a noticeable gap in research focusing on Ogbia Local Government Area, specifically Kolo Creek Communities. Despite being hotspots for illegal refining, these areas lack extensive inquiries into their specific socioeconomic impact. Closing this knowledge gap is crucial to creating focused interventions and policies that tackle the particular difficulties these communities face.

Theoretical Infrastructure

The Diffusion of Innovation Theory (DIT), developed by Everett Rogers, was used in the study. Diffusion according Rogers (2003) is "the process in which an innovation is communicated through certain channels over time among the members of a social system," according to Rogers (p. 5). According to this definition, innovation diffusion involves four components: time, social system, communication channels, and innovation. An innovation is defined as "an idea, practice, or project that an individual or other unit of adoption perceives as new" (p. 12). According to Sahin (2006), “An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them.” Communication channels are the second component of the innovation diffusion process. According to Rogers (2003), dialogue is “a process in which participants create and share information with one another in order to reach a mutual understanding” (p. 5). “This communication occurs through channels between sources” (Sahin, 2006). To Rogers “a source is an individual or an

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institution that originates a message while a channel is the means by which a message gets from the source to the receiver" (p. 204). According to Sahin (2006), Rogers states that:

> Diffusion is a specific kind of communication and includes these communication elements: an innovation, two individuals or other units of adoption, and a communication channel. Mass media and interpersonal communication are two communication channels. While mass media channels include a mass medium such as TV, radio, or newspaper, interpersonal channels consist of a two-way communication between two or more individuals. (p.5)

To Rogers, "diffusion is a very social process that involves interpersonal communication relationships" (2003, p. 19). Interpersonal channels involve direct communication between two or more individuals. This type of communication is characterized by personal interaction, feedback, and dialogue and, therefore, plays a significant role in influencing individual decisions and behaviours. Town hall meetings are an excellent example of this type of communication. A town hall meeting is a public gathering where community members can discuss concerns, share information, and engage in conversations with local leaders or representatives. The main objective of these meetings is to make it easier for people to talk to their government or community leaders openly. This allows for accountability, suggestions, and involvement of the community in making decisions.

The third element of Diffusion of Innovation Theory is time. According to Rogers (2003), as cited in Sahin (2006), most behavioural research ignores the time component. Accordingly, one of the advantages of diffusion research is demonstrated by the inclusion of the time dimension (Rogers, 2003). Time is a component of the innovation-diffusion process, adopter classification, and adoption rate. The final component in the diffusion process is the social system. The social system, according to Rogers (2003), is "a collection of interconnected units engaged in joint problem solving to accomplish a common goal" (p. 23). Since the diffusion of innovations takes place in the social system, it is influenced by the social structure of the social system.

The social structure of the social system has an impact on the diffusion of innovations since it occurs within the social system. Rogers (2003) defines structure as "the patterned arrangements of the units in a system" (p. 24). He added that the primary criterion for classifying adopters is innovativeness, which is influenced by the social system (Sahin,2006). Since it offers a framework for comprehending the adoption and spread of new ideas and behaviours, like illicit refining, the Diffusion of Innovation Theory (DIT) is pertinent to the study. The theory argues that adoption occurs through communication channels over time and is influenced by the factors of perceived gains and barriers, socio-economic pressures and alternative livelihoods. In this context of *kpofire* in Kolo Creek Communities,

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understanding the diffusion of illegal refining behaviour can help identify key promoters of illegal refining, and can also identify potential gatekeepers to prevent its spread while revealing factors fostering adoption including perceived benefits, economic pressures and livelihood alternatives. Applying this theory to the study enables researchers and policymakers to craft targeted interventions that prevent *kpofire* spread and promote alternative livelihoods for the affected communities. Effective communication strategies can disseminate these interventions to key influencers and community members, resulting in a positive impact on the socio-economic situation of affected communities. By using the town crier system of information dissemination system, opinion leaders in the various communities can spread information through criers or designated person with megaphone in the various quarters, towns and villages to keep the people abreast about the dangers of getting involved in *kpofire* and sometimes mobilize people to advocate for the provision of modular refinery in the area.

The Study Area

Nigeria's South-South geopolitical zone consists of six states, including Bayelsa. It shares interstate borders with Delta State (East and Southeast) and Rivers State (West and Northwest), with the Gulf of Guinea to the south. Yenagoa, the state capital, occupies 21,108.4 square kilometers. It is located at latitude 4°45' North and longitude 6°05' East. With a population density of 209, its population was 1,704,515 in the 2006 census and 2,277,961 in the 2016 forecast. It makes up 1.21% of the entire population of Nigeria. Brass, Ekeremor, Kolokuma/Kolokuma, Nembe, Ogbia, Sagbama, Southern Ijaw, and Yenagoa are the eight local government areas that comprise Bayelsa State. The Kolo Creek areas as defined by this study include the communities of Imiringi, Otuasega, Elebele, Emeyal 1, Emeyal 11 and Emeyal 111. According to Dr. Digha Opaminola Nicholas, an Otuoke indigene, Kolo Creek originates from Okaki in Rivers State. The area was named after the river by Shell. Fishing serves as the main source of income for them due to their proximity to various water bodies. In addition, they participate in agricultural practices, cultivating crops such as cassava, yams, and vegetables, and they also produce palm oil. Since the discovery of oil in the 1950s, the region's economy, which was expected to undergo positive transformation, has instead resulted in environmental degradation and conflict.

Methodology

To fill the knowledge gap on the impact of *kpofire* syndrome on Kolo Creek communities' socio-economic lives, this study adopted the mixed research methods, combining historical-analytic, key person interview (KPI), and survey to gather data. Fifty (50) respondents from Imiringi, Emeyal I, Emeyal II, Emeyal III, Elebele, and Otuasega communities were randomly selected within purposively selected communities based on *kpofire* prevalence and administered survey questionnaires using the Likert Scale. The historical-analytic method is a

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systematic approach to studying historical events and phenomena to gain insights and understand their significance within a broader context. The method involves examining historical documents, texts, or records to analyse and interpret past events or phenomena. The adoption of this method would enable the researchers to delve into archives, libraries, and other sources of historical data to develop a comprehensive understanding of how *kpofire* syndrome has affected the socio-economic lives of the people of Kolo Creek communities. This approach uncovered patterns, trends, and insights into the unfolding of events over time (Jackson& Lapsley, 1985). The historical-analytic method is a valuable tool in qualitative research for situating current phenomena within a historical context. The researchers, however, examined some historical documents and analysed the data collected, thereby gaining a deeper understanding of the modus operandi of *kpofire* in the selected communities. Sarantakos (2012) observes that by triangulating multiple sources and perspectives, researchers can enhance the rigor and credibility of their analysis.

This study also employed key person interviews (KPIs) to gather data from experts and knowledgeable individuals familiar with the communities and *kpofire* syndrome. KPIs provide insights, perspectives, and in-depth understanding of the research topic, accessing valuable information that may not be readily accessible through other data collection methods. According to Bernard (2006), key person are individuals with direct experience or knowledge about the research topic and can offer unique insights that enrich the research findings. This design was adopted to gather in-depth, qualitative insights into *kpofire* activities, challenges and solutions. It was done face to face. It provides rich, contextualized data and allowed for probing and follow-up questions. The study utilized a survey method to gather information from a representative sample of individuals in the selected KCCs. Three (3) key persons were purposively sampled from three communities. Their responses were recorded and later transcribed on pen and paper. Two other community leaders from Elebele and Otuasega scheduled for interview later declined for obvious reasons known to them. Structured questionnaires were used to collect data on attitudes, opinions, behaviours, and demographics. A paper-based questionnaire with close-ended questions was designed to elicit specific information related to the study's objectives. Response options using Likert Scale such as strongly agree, agree, disagree, strongly disagree and neutral were used. The researchers read the questionnaire aloud to non-literate respondents in local dialect mainly pidgin English, providing response options. Respondents made their selections verbally and the researchers marked the chosen answers while the literate ones filled their responses independently. This design was relevant to the study because it provided context-specific data on *kpofire* experiences. It was cost effective compared to interviews or observation while also contributing to evidence-based research. The limitation of the questionnaire design is that they may not capture nuanced or contextual information and there may also be sampling bias because the selected respondents may not represent the entire population. Also, the work was more focused towards qualitative rather than quantitative research. The

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innovation in the study was the adoption of modular refining and traditional communication (e.g., town criers) to replace illegal *kpofire*.

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Analyses of Data
Section A
Table 1: Demographics

Demographic information of respondents	**Age**			**Gender**		Educational Qualification			Marital Status			Religion		Socio-Eco Status			Total
Kolo Creek Communities	**20-40**	**41-60**	**61 & above**	Male	Female	Prim.	Sec.	Ter	Single	Married	Others	Christian	Islam	Low	Avg	High	50
Imiringi	6	3	1	6	5	-	2	8	5	6	1	8	1	4	5	1	9

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Emeyal 1	5	2	1	6	6	-	1	7	4	4	-	7	1	2	7	2	9
Emeyal 11	5	1	-	4	3	-	1	7	3	5	-	8	-	1	6	1	9
Emeyal 111	6	2	-	3	4	-	1	6	6	3	1	6	-	2	5	1	8
Elebele	7	3	-	5	2	-	1	8	4	2	-	10	1	1	4	1	8
Otuasega	6	2	-	4	2	-	-	8	2	4	-	8	-	1	6		7
Total	35	13	2	28	22	-	6	44	24	24	2	47	3	11	33	6	50

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Discussion of Findings

Table 1 above is a summary of the demographic information of the respondents drawn from the six KCCs with a total number of 50 respondents. The questionnaires were purposively distributed in this number; 9 only in Imiringi, 9 in Emeyal 1, 9 in Emeyal11, 8 in Emeyal 111, another 8 in Elebele, and 7 in Otuasega. The reason for this unequal distribution of the questionnaires is that some communities are more affected by *kpofire* than others. The respondents comprised 28 males (56%) and 22 females (44%) whose age brackets fall between 20-40, 41- 60 and 61 and above. Information derived from the table revealed the percentage of those whose age bracket fall within 20 - 40 as 70%, 41 - 60 was 26% while 61 and above was just 4%. Responding to educational qualification, 88% of the respondents attained tertiary education, 12% went to secondary school while primary education recorded 0%. Among the respondents, 24 (48%) were married, another 24 of 48% were single and only 2 (4%) were divorced or separated. On the aspect of religion, 94% represented Christians just as 6% represented Islam. The table also revealed information on the socio-economic status of the respondents as 22% for low-income earners, 66% against average-income earners and 12% represented high-income earners.

Section B

Table 2: Computation of Percentage Responses of the Effects of *Kpofire* Syndrome on the People of Six Kolo Creek Communities

S/No	Statement Questions	Total Responses/ Total Percentage	SA	%	A	%	D	%	SD	%	N
1.	*Kpofire* syndrome has subjected the people of Kolo Creek communities to poverty and hardship.	N = 50 % = 100	3	6%	30	60%	12	24%	5	10%	-
2.	*Kpofire* activities have affected agricultural yield of the people of Kolo Creek communities.	N = 50 % = 100	19	38%	25	50%	5	10%	1	2&	-
3.	*Kpofire* syndrome has provided job opportunities for the people of Kolo Creek communities.	N = 50 % = 100	4	8%	22	44.%	19	38%	5	10%	-

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4.	*Kpofire* syndrome has enhanced the main source of income of the people of Kolo Creek communities.	N = 50 % = 100	2	4%	21	42%	21	42%	6	12%	-

In discussing Table 2 above, data analysed in respect of item 1 revealed that 3 respondents out of 50 (6%) strongly agreed that *kpofire* syndrome has subjected the people of KCCs to poverty and hardship; 30 respondents (60%) agreed; 12 respondents (24%) disagreed while 5 respondents (10%) strongly disagreed with nil for neutral. The finding therefore showed that indeed, the people of KCCs have been subjected to poverty as a result of *kpofire* syndrome. Item 2 in the same table revealed 19 representing 38% respondents as strongly agreed that *kpofire* activities have affected the agricultural yield of the people of KCCs. While 50% of 25 respondents agreed, 5 persons representing 10% disagreed, with only 2% recorded against the strongly disagreed, thereby concluding that *kpofire* has affected agricultural yield in the KCCs.

On *kpofire* syndrome providing job opportunities for the people of KCCs as stated in item 3, 4 respondents (8%) strongly agreed to it with an additional 44% of 22 respondents who agreed. However, 38% of 19 respondents disagreed while only 10% of 5 respondents strongly disagreed. This result implies that a majority of the people probably out of ignorance think that *kpofire* is a legitimate business which many of them have leveraged for economic sustenance without considering its negative effects on the general socio-economic lives of the KCCs. Also, item 4 in the table is a clear revelation of the respondent's acceptability to the statement that *kpofire* syndrome has improved the main source of income of the people of Kolo Creek communities as results indicated that 4% of 2 respondents strongly agreed in addition to 42% of 21 respondents who agreed. Those who disagreed were 21 (42%) while 12% strongly disagreed. In this instance, there is a percentage tag between those who agreed and those who disagreed simply because those who benefit from *kpofire* see it as enhancing their source of income which is one of the reasons for this study because a lot of the people are not properly informed. Based on the higher percentage of respondents who strongly disagreed compared to those who strongly agreed, we can rightly conclude that *kpofire* syndrome has not in any way improved the main source of income of the people of KCCs.

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Section C

Table 3: Effects of *Kpofire* on the of Health of the People Kolo Creek Communities

S/No	Statement Questions	Total Responses/ Total Percentage	SA	%	A	%	D	%	SD	%	N
5.	Respiratory diseases, skin rashes and burns are effects of *kpofire* on the health of the people of Kolo Creek communities.	N = 50 % = 100	17	34%	28	58%	2	4%	2	4%	-
6.	*Kpofire* produces black smoke (sooth) which can lead to death.	N = 50	23	46%	25	50%	0	0%	2	4%	-
7.	*Kpofire* shortens the lifespan of the people of Kolo Creek communities.	N = 50 % = 100	21	42%	23	46%	5	10%	1	2%	-
8.	*Kpofire* has devastating effects on the lives of plants and animals in Kolo Creek communities.	N = 50 % = 100	31	62%	19	38%	0	0%	0	0%	-

Table 3 analysis of data indicated that in item 5, it was discovered that 34% of 17 respondents strongly agree wholeheartedly that respiratory diseases, skin rashes and burns are some of the effects of *kpofire* on the health of the people of KCCs. Supporting this claim by agreeing were 28 respondents representing 58% while a hand few of 4% was recorded against those who disagreed and those who strongly disagreed. The result revealed that *kpofire* has devastating effects on the health of the people of KCCs. Item 6 on the table had 46% of 23 respondents who strongly agreed to the statement that *kpofire* produces black smoke (soot) which can lead to death. Those who also agreed were pegged at 50% of 25 respondents while 0% and 4% were recorded against those who disagreed and strongly disagreed. Interestingly, a larger percentage of respondents attested to the fact that *kpofire* can lead to death.

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Progressing further in the analysis, four (3) stakeholders were interviewed. Mr. Tonari Ogiasa, a local leader in Imiringi argued that indigenes of Imiringi from history have never been involved in *kpofire* activities, i.e., the actual refining in the forest but admits that it exists in other KCCs. He mentioned Ibelebiri, a neighbouring community as one Kolo Creek community where *kpofire* thrives. He linked *kpofire* activities in Imiringi as one perpetrated by non-indigenes who see it as a lucrative business until the timely intervention of some community stakeholders, concerned youth and the Joint Task Force (JTF) in collaboration with the government-initiated efforts to end the menace. According to him, "Imiringi youths and women only engage in *kpofire* business in the buying and selling of the illegally refined product and this illegal act have generally affected the socio-economic lives of the people. Sadly, the end products of *kpofire* are emptied into the rivers which serve domestic purposes thereby engendering the lives of the people, plants and animals" (Personal communication, 2024).

Furthermore, item 7 on the table showed that 21 respondents representing 42% strongly agreed with the statement that *kpofire* shortens the lifespan of the people of Kolo Creek communities. Corroborating this statement, 46% of 23 agreed while a hand few of 10% of 5 respondents and 2% disagreed and strongly disagreed respectively. This therefore leads to the conclusion that *kpofire* shortens the life span of the people in those selected communities. The last item 8 in this section had 62% of 31respondents strongly agree that kpofire has devastating effects on the lives of plants and animals in Kolo Creek communities with 38% of 19 respondents agreeing. However, it is not surprising to discover that no percentage was recorded against disagreed, strongly disagreed and neutral which shows that they are experiencing the devastating effects of *kpofire* on their crops and animals.

Section D

Table 4: Effort of Government in Curbing the Activities of *Kpofire* Syndrome in Kolo Creek Communities

S/No	Statement Questions	Total Responses/ Total Percentage	SA	%	A	%	D	%	SD	%	N
9.	Government has put adequate regulatory measures in place to checkmate *kpofire* syndrome.	N = 50 % = 100	6	12%	18	36%	16	32%	10	20%	-
10.	Government has not made a serious effort to curb *kpofire* syndrome in Kolo Creek	N = 50 % = 100	12	24%	25	50%	8	16%	4	8%	-

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	communities.										
11.	Checkmating *kpofire* syndrome is the responsibility of the government and stakeholders.	N = 50 % = 100	29	58%	21	42%	0	0%	0	0%	-
12.	Government should establish modular refineries to checkmate *kpofire* activities in Kolo Creek communities.	N = 50 % = 100	31	62%	16	32%	0	0%	3	6%	-

Discussing further item 9 in Table 4, 6 respondents representing 12% strongly agreed that the government has put adequate regulatory measures in place to checkmate *kpofire* syndrome. Meanwhile, 18 respondents (36%) agreed while those who disagreed and strongly disagreed were 32% and 20% respectively. Findings revealed many agreeing that the government has put regulatory measures to checkmate *kpofire* but regret that such measures did not yield positive results. In addition, item 10 had 24% of 12 respondents who strongly agreed that the government has not made a serious effort to curb *kpofire* syndrome in KCCs. There were 50% of 25 respondents who agreed, 16% who disagreed and 8% who strongly disagreed. From available data, we can, therefore, deduce that the government has not made a serious effort to curb *kpofire* syndrome in KCCs.

An interviewee from Emeyal 11 who chose to remain anonymous for security reasons alleged that security operatives and top government officials are involved in the nefarious enterprise of *kpofire* and would continue to do everything possible to sabotage all efforts geared towards correcting the menace. Having experienced it first-hand in their community, the interviewee also alleged that security agencies sublet well-head and receive as much as fifty million naira every two weeks. Operational bases are lobbied so that they can be posted to areas where they can make "cool money at the expense of people's lives." The interviewee further alleged that *kpofire* started with Asari oil (Anonymous, personal communication, 2024).

Meanwhile, item no 11 in the table revealed that 29 respondents (58%) strongly agreed with the statement that checkmating *kpofire* syndrome is the responsibility of government and stakeholders. As indicated, 42% of 21 respondents agreed while zero percentages were recorded against those who disagreed, strongly disagreed and neutral indicating that government has the sole responsibility of checkmating *kpofire* syndrome. Analysis of item 12 in table 4 showed that 62% of 31 respondents strongly agreed that the government should establish modular refineries to checkmate *kpofire* activities in KCCs. There was 32% of 16

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respondents who agreed; 0% disagreed while 16% was recorded against those who strongly disagreed. The inference, therefore, is that relevant authorities should establish modular refineries to checkmate *kpofire* activities in KCCs. The *kpofire* syndrome has a significant impact on the socio-economic situation of Kolo Creek communities (KCCs), affecting not only their economic lives but also their health and overall quality of life. Following several years of illegal siphoning and refining of oil, the Nigerian government has come up with some interventionist platforms either by way of seizures or granting amnesty programmes to maintain peace, security, protect lives and property in the region (Abdullahi 2024).

Conclusion and Recommendations

The study investigated the syndrome to highlight its incendiary status and to communicate the results of the findings to the six KCCs, including Imiringi, Emeyal 1, Emeyal 11, Emeyal 111, Elebele, and Otuasega. and in addition, the Niger Delta region and globally. The study, therefore, recommends a genuine collaborative effort by the government, international oil companies and the community's representatives in setting up monitoring agencies/committees to checkmate *kpofire* activities in the area to guarantee better living standards. In doing this, relevant legislation, advocacy, and training should be designed and implemented to allow for modular refining and adoption of traditional communication (e.g., town criers) to replace illegal *kpofire*. This innovation would empower and enlighten illegal refiners to become responsible business people to contribute to the socio-economic well-being of the concerned communities and guarantee a sustainable environment and living.

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