

Review Article

Environmental Health Risks, Community Experiences, and Healthcare Access in Oil-Producing Low- and Middle-Income Countries: A Scoping Review Protocol

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The exploration of oil and its production have caused significant environmental degradation and posed critical health concerns in low- and middle-income (LMICs) oil producing regions. These regions exposed to gas flaring, oil spills, soil pollution, and contaminated water report various environmental health risks, health impacts (such as respiratory illnesses, dermatological conditions, haematological and reproductive disorders), and barriers to health healthcare access. Nonetheless, existing literature is fragmented both geographically and methodologically and limited to few countries.

The main aim of this scoping review is to systematically map and synthesise multi-regional evidence on environmental health risks, lived community experiences, and healthcare access in oil-polluted localities in LMICs, with contextual grounding in Bayelsa State, Nigeria.

This scoping review will follow the Framework of Arksey and O. Malley as enhanced by the Joanna Briggs Institute (JBI) and will be reported using PRISMA-ScR. Databases to be searched include PubMed, Scopus, Web of Science, Embase (via Ovid), LILACS, AJOL, and ProQuest Dissertations/Theses. A supplementary search in Google Scholar will be done for grey literature. Extracted data will be presented in tabular forms and then summarised in descriptive manner. Eligibility criteria are structured around population, concept, context, and study design. The review will include both qualitative, quantitative and mixed methodology studies, exploring the

environmental health risks, lived community experiences, and healthcare access in these oil-producing countries.

As data used for this review were available for the public, ethical approval is not required. The findings of this scoping review will inform and essentially support public and environmental health research in oil-rich yet vulnerable settings. Finally, results will be disseminated through peer-reviewed publication, policy brief, conference presentations, and stakeholder engagement in Bayelsa State, Nigeria.

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Introduction

Oil production remains a central driver of economic activity in many low- and middle-income countries ^{[1][2]}. However, it is also widely linked with multiple, severe harms including environmental damage and adverse population health outcomes such as respiratory diseases, dermatological conditions, and increased cancer risks ^[1].

Many regions undergoing intense oil exploration, such as the Niger Delta in Nigeria, Amazonian basin in Ecuador, coastal areas of the gulf of Guinea including Angola and Equatorial Guinea, river systems in Venezuela, and oil fields in Colombia have reported persistent pollution impacts such crude oil spills, gas flaring, refining waste discharge, and pipeline leaks ^{[3][4][5][6]}. For instance, years of oil exploration in the Niger Delta of Nigeria has given rise to widespread groundwater contamination and ecosystem loss ^[7]. Heavy metals and petroleum hydrocarbons have been detected in both drinking water and sediments, raising critical concerns about chronic toxic exposure ^{[7][8]}. Moreover, gas flaring contributes to sustained air pollution associated with respiratory illnesses and adverse maternal outcomes.

Comparable patterns are evident in Latin America, for instance, in the Amazon region of Ecuador, oil extraction has been associated with water contamination and increased health risks among indigenous groups ^{[9][10]}. These include elevated cancer rates among Kichwa and other indigenous communities of the Ecuadorian Amazon, documented in association with decades of oil contamination ^[10]. Meanwhile, spatial analyses have shown that oil spill sites overlap with inhabited zones, thus increasing long term exposure risk ^[4]. Reports from Colombia indicate that hydrocarbon pollution has affected aquatic

ecosystems and posed risks to food safety and human health ^{[11][12]}. In Venezuela, contamination of river systems has raised concern about water stress and ecological decline in oil producing areas ^[6].

Beyond site specific cases, global assessments confirm that fossil fuel extraction and refining generate measurable health, social, and environmental burdens. A global analysis of industrial sites identified significant health impacts linked to oil refineries and related facilities ^[13]. Reviews of upstream extraction processes highlight consistent associations between petroleum exposure and adverse health outcomes, including cancer risk and blood disorders ^{[1][14]}. These findings align with broader evidence that environmental pollution is a major determinant of disease burden worldwide ^[15].

Oil pollution does not only disrupt ecological systems; it undermines local livelihoods. Fishing and farming communities in affected regions report loss of income due to soil degradation and contaminated water bodies ^[16]. Such livelihood loss can intensify poverty, limit food security, and reduce capacity to seek health care.

The commercial determinants of health framework have emphasised how corporate practices may shape exposure patterns and constrain public health policy responses ^[17]. Commercial activities undertaken by multinational corporations can shape government policies and regulatory practices, which in turn influence environmental exposures, access to health-promoting resources, and ultimately health outcomes among affected populations ^[18]. In oil producing regions, these commercial and structural drivers manifest through interaction with weak policy enforcement and limited health system capacity ^[17]. Limited institutional capacity, power asymmetries and ineffective regulations have been identified as key barriers to effective environmental governance in oil-producing regions of LMICs ^{[19][1]}. Evidence of inadequate and delayed spill remediation is especially apparent In the Niger Delta, where the UNEP Ogoni land Environmental Assessment reported that contamination remained widespread in spite of previous cleanup efforts and estimated that complete restoration could require 2-3 decades ^[19]. Comparable failures characterise the Amazonian regions of Ecuador, following years of oil exploration ^[1] and these dynamics depict broader commercial determinants whereby public health policy is systematically constrained by corporate practices ^[17].

Regardless of the extensive documentation of environmental contamination, there is still limited synthesis of community level risk and lived experience. Evidence from Ecuador shows that social perceptions of exposure may well differ from technical risk assessments and this shapes health seeking behaviour ^[9]. Likewise, in Bayelsa State of the Niger Delta, residents engaged in artisanal refining

reported heightened perception of health risk yet faced barriers to formal care [20]. Comparable qualitative work in southern Africa has shown that community narratives reveal dimensions of risk not very well captured by environmental monitoring alone [21].

Barriers to healthcare access in oil polluted regions are rarely analysed alongside exposure data [22]. Beyond these evidence gaps, important shortcomings also exist in understanding the broader health system context within which affected populations seek care. For instance, in Nigeria, disparities in health funding and infrastructure have constrained progress towards universal health coverage [22]. Thus, the environmental and health impacts of oil and gas exposure may further compound the burden on already constrained healthcare systems, as damaged livelihoods and reduced household income increase economic vulnerability and directly reduced the ability of residents to afford healthcare [23]. While several reviews have examined ecological damage or toxicology profiles, fewer have mapped methodological approaches used to study health risk, social exclusion, and access to care across oil producing countries [24].

This broad context demonstrates that oil pollution is both an environmental and a public health issue with social and political dimensions. However, the literature remains fragmented across disciplines and regions [25]. The Niger Delta, the Ecuadorian Amazon, and comparable oil producing regions in LMICs represent the most intensively studied contexts, yet a structured evidence synthesis spanning these regions simultaneously and integrating environmental health risk, lived community experience, and healthcare access has not been conducted [26][27]. A scoping review that spans LMICs is therefore warranted to map evidence across these intersecting domains, clarify conceptual gaps, identify methodological trends, and inform policy responses that support health equity in resource-rich but vulnerable regions [28][29].

Research on oil pollution and health spans several designs, including cross sectional surveys, cohort studies, qualitative interviews, case reports, policy analyses, and relevant doctoral theses. Grey literature from global agencies and civil groups further expands the evidence base [30]. Such heterogeneity limits the feasibility of a narrow systematic review at this stage. The Arksey and O'Malley Framework recognises that scoping reviews are suited to fields with diverse sources and varied study designs [25].

The key concepts within this study are not applied in a uniform manner across regions. Terms such as environmental health risk and community experience are defined through different lenses. Some studies frame risk as toxic exposure measured by biomarkers, while others focus on lived accounts of illness and

social harm ^[1]. Whilst there is no known synthesis that spans oil-producing LMICs with a focus on environmental health risk, lived experience, and healthcare access, existing reviews often address toxicology, ecological damage, or single country contexts ^{[8][24]}. Although these reviews provide valuable insight, they do not integrate health risks, health outcomes, and lived experiences with service access across multiple regions. This scoping review allows for the mapping of this broader terrain and the identification of regional gaps ^[31].

Hence, this review will highlight how environmental exposure intersects with social and health system inequity. The findings will thus support policy dialogue and academic debate on the distribution of environmental health risk and access to care in resource rich yet vulnerable settings. The findings will also support stakeholder engagement in Bayelsa State, the wider Niger Delta, and cross-regional application. Bayelsa State will serve as a contextual anchor for the discussion and dissemination phases of the review, specifically for interpreting cross-regional findings in terms of their applicability and implications for the local context, and for designing the stakeholder engagement plan. This contextual grounding does not and will not constrain the review's eligibility criteria, search strategy, or analytical scope, all of which remain fully inclusive of all LMIC oil-producing settings.

Methods

Methodological approaches within environmental health and oil pollution literature vary widely. Some studies use spatial mapping of spill sites, while others employ interview-based inquiry or cohort follow up ^{[4][32]}. The review will be reported in alignment with PRISMA-ScR so as to ensure transparency and clarity ^[33]. Using this approach will support a well-structured account of the nature, range, and extent of the evidence.

For this scoping review, the Arksey and O'Malley Framework will be followed, outlining five fundamental phases which include identifying the research question, identifying relevant studies, study selection, charting the data, and collating and summarising the results ^[30]. This framework is appropriate for mapping broad and heterogeneous bodies of evidence. The review will incorporate methodological refinements enhanced by the Joanna Briggs Institute and particularly in relation to eligibility criteria, transparent reporting, and data charting. Also, the reporting of the final review will be in alignment with the PRISMA-ScR to ensure clarity, completeness, and reproducibility of the search and eligibility criteria ^[33]. The eligibility criteria and search terms may be refined during preliminary screening to

ensure conceptual consistency with the research questions of the review and modifications will be documented and justified in the final manuscript.

Research Question

What is known from existing literature about the environmental health risks, health outcomes, lived experiences, and healthcare access of people living in localities affected by oil pollution in low- and middle-income countries (LMICs).

Research Sub Questions

1. What environmental health risks and health outcomes have been documented among people living in localities affected by oil-pollution in LMICs?
2. How are the lived experiences of residents in these oil-polluted localities described in the literature?
3. How is access to healthcare described among populations living in oil-polluted localities?
4. Which methodological approaches and theoretical frameworks have been used in research on oil pollution and community health in these regions, and what gaps in methodology or theory are evident?
5. How does the existing literature describe the interconnections between environmental health risks, health outcomes, lived experiences, and healthcare access in oil-polluted localities in LMICs?

Eligibility Criteria

Inclusion Criteria

Eligibility criteria are structured around population, concept, context, and study design.

Population

Studies involving residents of oil-producing or oil-polluted LMICs will be included. This encompasses local groups/rural populations, and communities with exposure to oil pollution arising from exploration, production, refining, transport, or spill events.

Concept

This scoping review will be considering studies (quantitative, qualitative, and mixed methods) that explored environmental health risks, community experiences, and healthcare access in oil producing localities.

Operational definitions;

1. Environmental health risks: Refers to documented or perceived hazards arising from oil-related pollution including chemical exposure through contaminated air, water, soil, or food with the potential to cause adverse health effects at the community level.
2. Health outcomes/impacts: Refers to short or long-term physical and mental health and wellbeing arising from exposure to oil and gas operations.
3. Lived/community experiences: Refers to subjective, first-person or community-level accounts of how oil pollution affects daily life, health, livelihoods, social relationships, and community wellbeing, as elicited through qualitative or participatory methods.
4. Healthcare access: This will be operationalised using Penchansky and Thomas' multidimensional framework encompassing availability, accessibility, affordability, accommodation, and acceptability of health services ^[34].

Context

The review will include oil-polluted areas in LMICs, using the World Bank income classification (World Bank, 2025) ^[35]. These regions were selected because they represent the areas with the largest concentration of oil pollution, where environmental governance is often weak and health system capacity is constrained ^{[1][36]}. This rationale is detailed further in Exclusion Criteria, below.

Exclusion Criteria

Purely laboratory based toxicological studies without community level data will be excluded. Studies restricted to occupational exposure among offshore workers will not be included. Editorials and opinion pieces without empirical data will also be excluded. Materials available exclusively in languages other than English will be excluded. This may introduce a degree of language bias, which will be documented as a limitation in the final review report in accordance with the PRISMA extension for Scoping Reviews (PRISMA-ScR) reporting guidelines. The limitation of the review to publications in English language is

primarily for feasibility and resource considerations, including the lack of capacity for systematic translation and validation of non-English studies. Given the broad scope of the review and the substantial volume of literature anticipated, inclusion of studies in multiple languages would require resources beyond those available to the review team and could introduce inconsistencies in study screening and data extraction.

Whilst there is a substantial literature on oil pollution and health in high-income contexts such as the United States Gulf Coast (for example Deepwater Horizon), the North Sea, and Alberta in Canada, these settings differ fundamentally in terms of regulatory enforcement, health system strength, and community political power differ substantially across these settings, rendering direct comparison methodologically problematic ^[37]. Therefore, high-income country contexts will be excluded.

Types of Sources

The review will include qualitative studies, quantitative observational studies, mixed methods research, participatory research, and relevant grey literature. Eligible grey literature sources may include google scholar and doctoral theses/dissertations. The inclusion of such materials goes beyond what would be captured through conventional academic database searches alone and is essential to map the full range of literature.

Information Sources

A comprehensive search will be conducted across major electronic databases. These will include PubMed/Medline, Scopus, Web of Science, Embase, African Journals Online (AJOL), LILACS, and ProQuest Dissertations/Theses. A supplementary search on Google scholar will be conducted by using search terms combined with 'filetype-pdf' with an explicit stopping rule of the first 200 results to retrieve documents not indexed in academic databases. Screening of titles and abstracts will be undertaken using Rayyan and reference management will be conducted using Zotero. Additionally, forward and backward citation searches will be incorporated as supplementary search methods. For backward citation searching, systematic checking of reference lists of all included full-text studies will be conducted during the full-text screening stage and forward citation searching will involve the use of Google Scholar and Scopus cited-by functions for key seminal papers identified during the review. This protocol will be registered on the Open Science Framework (OSF) and OSF registration number will be reported in the final review manuscript.

Search Strategy

The search strategy will combine controlled vocabulary terms and free-text keywords related to oil pollution, health risk, health outcome, community experience, and healthcare access. Boolean operators will be used to structure the search ^[38].

The search terms will be adapted for each database using relevant subject headings where available (MeSH, Emtree). No initial restriction on study design will be applied, and no date limits will be set. The date of search will be stated, and the full electronic search strategy is provided in Appendix I. An attachment file will be provided for adapted databases.

Study/Source of Evidence Selection

All identified records will be exported to Zotero for duplicate removal and then imported into Rayyan for screening. Study selection will occur in two stages: title and abstract screening, followed by full text review.

Screening will be conducted by two reviewers. It will be led by the primary reviewer (AP), and a second reviewer will be recruited. Prior to formal screening, a calibration exercise will be conducted on a sample of 50 records (approximately 10% of the anticipated yield), screened independently by both reviewers and discussed with supervisors (LD and PA) to ensure consistent application of eligibility criteria. Suggestions from Rayyan that are AI-assisted will also be used to support efficiency. The two reviewers will screen all records during formal screening, and uncertain or borderline cases will be flagged and resolved by the supervisors. A sample of excluded records will be checked by supervisors to provide quality assurance. This approach is consistent with JBI guidance for scoping reviews, provided quality assurance processes are in place ^[39]. Also, the reasons for exclusion at full-text stage will be stated, and the selection process will be reported using a PRISMA-ScR flow diagram. Fig. 1 schematically illustrates the screening process.

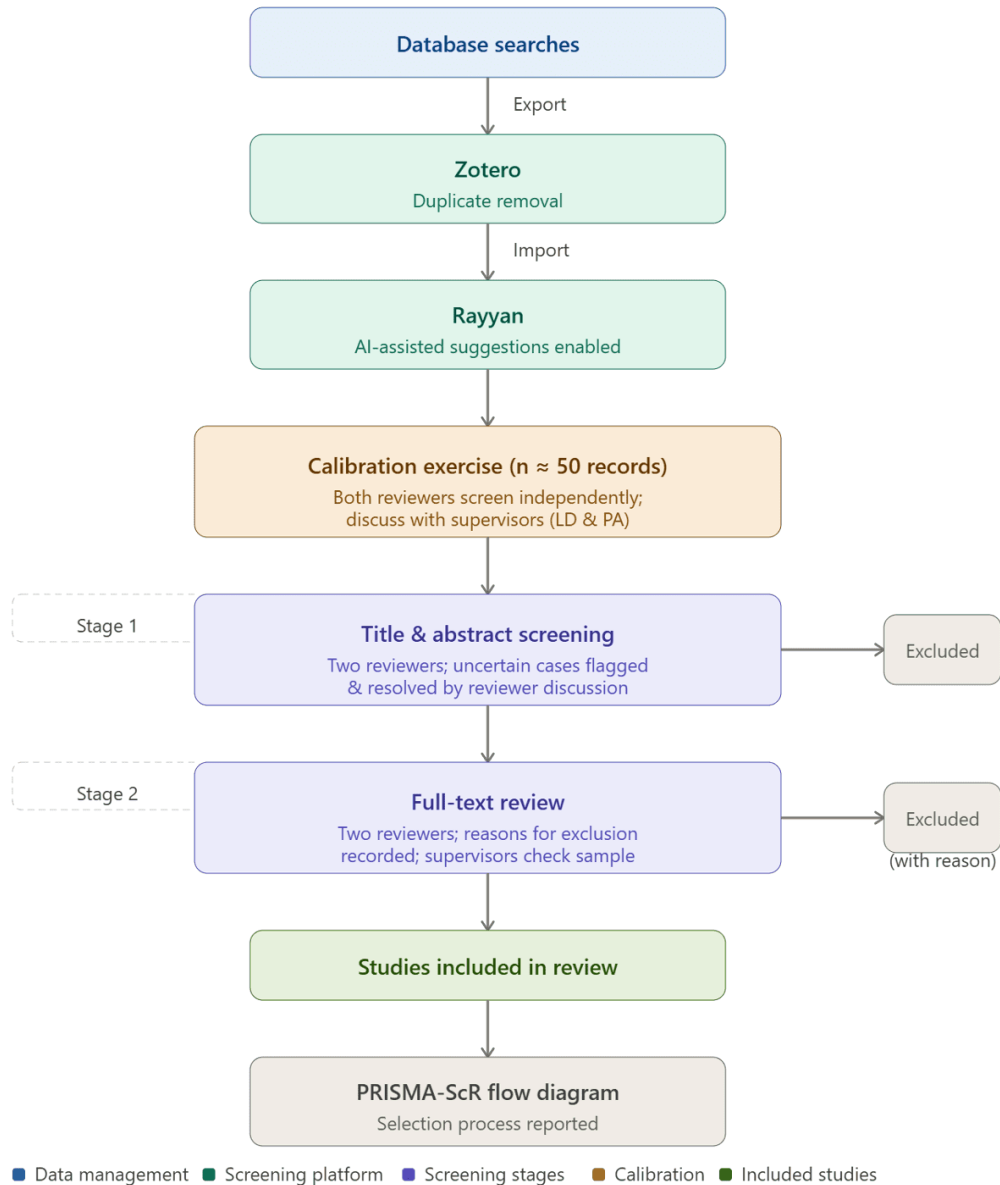


Figure 1. Schematic illustration of the screening process.

Data Extraction

A data extraction template/charting form will be developed in line with guidance from the JBI ^[39]. The form will be piloted on five to ten included studies to ensure clarity and consistency. Revisions will be

made where necessary. The form is provided in Appendix IV, with each field cross-referenced to the relevant research sub-question.

Data extraction will be conducted by AP, and one supervisor (LD or PA) will check a sample of completed extraction forms for consistency and accuracy, in line with proportionate quality assurance for scoping reviews [39]. Referencing and bibliography will be managed using Zotero. Where information is unclear or incomplete, this will be noted explicitly as 'not reported' in the data extraction form.

Assessment of methodological quality

As scoping reviews distinct from conventional systemic reviews, they do not usually make assessment of methodological quality or bias risk of included studies [39]. This is because the purpose of scoping reviews is not to produce results that have been screened for synthesis or critical appraisal, instead, they are aimed at producing an overview of evidence [40]. Thus, this scoping review will not conduct methodological quality or bias risk assessment of studies included.

Data analysis and presentation

The data extracted will be organised and presented in form of tables. Also, additional visual representations will be incorporated to enhance data presentation where appropriate. Afterwards, a comprehensive descriptive analysis of the extracted data will be undertaken, and the findings will be narratively tabulated, demonstrating evidence distribution based on setting, study design, population, and main themes identified during the charting of data.

Ethical Approval

Ethical approval is not required for this review, as it involves analysis of publicly available literature and does not include primary data collection.

Discussion

This scoping review will provide a novel and original contribution in the forms of a structured cross-regional synthesis of evidence on environmental health risks, health outcomes, lived experiences, and healthcare access in oil-polluted localities across in LMICs. These differ from high income settings fundamentally in terms of regulatory enforcement, health system strength, and community political power, rendering direct comparison methodologically difficult [37].

By gathering literature from multiple oil-producing LMICs instead of focusing on a single country or region, the review will enable comparative analysis and identification of both systemic differences in these regions as well as shared patterns. Such comparison is essential since environmental exposure, social context, and health system capacity interact differently across various settings ^{[41][42]}. While there are a few similar reviews done in LMICs settings, these have focused on single-country or region basis only. A 2025 scoping review by ^[3] focused specifically on the Niger Delta, and related reviews by ^[7] and others have similarly remained within single-country or single-region frameworks. The present review adds value to existing works in two main ways. Firstly, by spanning multiple regions simultaneously to enable comparative analysis, and secondly by relating environmental health risk to a range of impacts including in health outcomes, lived experiences, and healthcare access within a single synthesis. The review will inform the conceptual framing and methodological design of the lead author's doctoral fieldwork in Bayelsa State, Nigeria on environmental health risks, community experiences, and healthcare access.

This review will ensure that subsequent primary fieldwork is targeted, methodologically rigorous, and directed at genuine research questions that current evidence is limited to answer. This aspect of the scoping review is distinct and as well complementary to its contribution to the wider academic literature on oil pollution and community health and wellbeing. Also, methodologically, it will map the predominant research designs and philosophical frameworks used in this field, identifying where longitudinal, participatory, or theoretically informed approaches are underrepresented.

Oil-producing localities across LMICs regions often experience a paradox of resource wealth and social deprivation ^{[43][23]}. Therefore, by performing a novel synthesis of the evidence on environmental health risks, health outcomes, lived experiences, and healthcare access, this review will highlight how environmental exposure intersects with lived experience and access to healthcare. The findings will thus support policy dialogue and academic debate on the distribution of oil and gas exposure, environmental health risk, lived experiences, and access to care in resource rich but vulnerable settings. The findings will also support stakeholder engagement in Bayelsa State, the wider Niger Delta, and cross-regional application.

Limitations

This Scoping review acknowledges some limitations. First, language preference, which may exclude important local-language papers, affecting the representation of evidence. Second, limited access to

some grey literature, especially older reports, may limit completeness of data. Also, diverse designs of study and contexts will constrain direct comparisons as well as publication bias may favour studies with positive findings, while community and indigenous perspectives may be underrepresented.

Appendix I. Full Database Search Strategy

Search String:

("oil pollution" OR "oil contamination" OR "oil spill" OR "petroleum contamination" OR "petroleum pollution" OR "petroleum spills" OR "hydrocarbon pollution" OR "hydrocarbon contamination" OR "gas flaring" OR "oil extraction" OR "petroleum extraction" OR "crude oil extraction" OR "petroleum exploration" OR "petroleum production" OR "oil drilling" OR "petroleum drilling" OR "oil refinery" OR "petroleum refinery" OR "crude oil" OR "petroleum hydrocarbons" OR "oil and gas" OR "oil and gas operations" OR "fossil fuel extraction")

AND

("health risks" OR "risk perception" OR "environmental health" OR "public health" OR "community health" OR "human health" OR "health outcomes" OR "health impacts" OR "health effects" OR "adverse health effects" OR "health consequences" OR "physical health" OR "mental health" OR "psychological impact" OR "psychosocial impact" OR "community experience" OR "lived experience" OR "resident experience" OR "community concern" OR "community perception" OR "community narrative" OR "community voice" OR "health-seeking behaviour" OR "social impact" OR "healthcare access" OR "healthcare accessibility" OR "healthcare availability" OR "healthcare utilization" OR "access to care" OR "healthcare service" OR "health system" OR "health service" OR "medical care")

AND

("low-income countries" OR "middle-income countries" OR "low- and middle-income countries" OR "LMICs" OR "developing countries" OR "Latin America" OR "Ecuadorian Amazon" OR "Asia" OR "South Asia" OR "Southeast Asia" OR "Africa" OR "Sub-Saharan Africa" OR "Niger Delta")

Filters: Humans; English.

Notes:

- Databases (PubMed, Scopus, Web of Science, Embase, AJOL, LILACS, ProQuest Dissertations) search will be conducted, using controlled vocabulary (MeSH, Emtree) where appropriate.

- Boolean operators and truncation symbols adjusted per platform.
- The search string will be adapted where necessary and the adapted strategies will be provided in a supplementary file for transparency.

Appendix IIA. Screening Form (Title/Abstract)

Reviewer ID: _____

Date: _____

Screening Checklist

Screening Item	Response (Yes/No/Unclear)	Notes
Is the study context within low- and middle-income countries?		
Is the study set in a geographical area impacted by oil and gas extraction or oil pollution?		
Are participants indigenous, rural, or residents exposed to oil pollution?		
Does the study examine environmental health risks/health outcomes or community/lived experiences or healthcare access/utilisation/barriers?		
Is the study type qualitative, quantitative, mixed-methods, or participatory?		
Exclude: purely lab-based toxicology, offshore occupational studies, non-English language, non-human studies, or high-income country context?		

Decision: Include / Exclude / Unsure

Comments: _____

Instructions:

- Include study if it examines oil & gas exposure and environmental health risks/outcomes or community/lived experience or healthcare access in a LMIC setting with a study design that is qualitative, quantitative or of mixed methodology.

- Some samples of articles that meet the criteria are given below in appendix II b;

Appendix IIB. List of studies that meet the inclusion/exclusion

criteria

List of studies that meet the inclusion/exclusion criteria

S/N	Article	Reason
1	Nkem AC, Devine S, Ogaji DS, Topp SM. Economic exclusion and the health and wellbeing impacts of the oil industry in the Niger Delta region: a qualitative study of Ogoni experiences. International Journal for Equity in Health. 2024 Sep 12;23(1):183.	Population: Ogoni residents Concept: Covers oil pollution, community experience, healthcare access Context: LMIC; Country: Nigeria Study design: Qualitative study This article meets the criteria for inclusion because studied how damaged livelihoods and reduced family income increased economic vulnerability and directly reduced participants' ability to pay for healthcare in a background of oil and gas pollution in a LMIC setting.
2	Sebastián MS, Armstrong B, Stephens C. Outcomes of pregnancy among women living in the proximity of oil fields in the Amazon basin of Ecuador. International journal of occupational and environmental health. 2002 Oct 1;8(4):312-9.	Population: Pregnant women in Ecuadorian Amazon. Concept: Covers oil extraction exposure, health outcomes (maternal & reproductive health). Context: LMIC; Country/Region: Ecuador. Study design: Quantitative epidemiological study. This study fits the criteria as it investigated the reproductive health outcomes of women living rural communities located near oilfields in a LMIC setting.
3	Nriagu J, Udofia EA, Ekong I, Ebuk G. Health risks associated with oil pollution in the Niger Delta, Nigeria. International journal of environmental research and public health. 2016 Mar;13(3):346.	Population: Residents of Akwa Ibom State Concept: Covers oil pollution/gas flaring, health outcome, community experience Context: LMIC; Country/Region: Nigeria Study design: Quantitative

S/N	Article	Reason
		The study meets the criteria because it examined health outcomes, psychosocial impacts (community experience) in a setting of oil and gas pollution.

Appendix III. Full-Text Screening Checklist

Reviewer ID: _____

Date: _____

Full-Text Screening Checklist

Screening Criterion	Response (Yes/No)	Notes / Justification
Study set in a geographical area impacted by oil extraction/pollution in LMIC		
Population includes people living in localities affected by oil extraction/oil & gas related pollution		
Study addresses environmental health risks/health outcomes or reports community lived experiences or examines healthcare access components.		
Study design is qualitative, quantitative observational, mixed-methods or participatory.		
Full text available in English		
Exclusion criteria met: lab-only toxicology, offshore occupational only, animal/no-human studies, high-income country context.		

Final Inclusion Decision: Include / Exclude

Comments / Rationale: _____

Appendix IV. Data Extraction Form Template

Reviewer ID: _____

Date Extracted: _____

Data Extraction Form (Cross-Referenced to Research Questions)

Data Item	Details / Notes	Linked Research Question
Author(s)		All
Year of Publication	No limits	All
Source type	Peer-reviewed empirical study, agency report, advocacy document, thesis etc.	ALL
Country / Region	Specify: Low- and middle-income countries	All
Study Title		All
Study Design / Methodology	Qualitative, quantitative, mixed-methods or participatory	All
Philosophical / Theoretical Framework	Positivism, realism, constructionism, pragmatism; theoretical lens used (e.g., environmental justice, political ecology, social determinants)	RQ4
Sample Size / Population	Specify: indigenous, rural, peri-urban locality residents, policymakers, healthcare workers, etc.	All
Type of Oil Pollution Exposure	Oil spills, gas flaring, pipeline leak, artisanal refining, produced water, other	All
Environmental Health Risks	Hazard type; affected media (air/water/soil/food); contaminants identified	RQ1
Documented Health Outcomes	Respiratory, dermatological, blood disease, waterborne illness, mental health, chronic disease, reproductive health, mortality etc.	RQ1
Community/Lived Experiences	Lived experiences of pollution, illness, displacement, livelihood loss, social exclusion, environmental injustice, cultural harm, psychosocial impacts	RQ2
Healthcare Access Findings	Availability, Accessibility, utilisation, barriers, facilitators, out-of-pocket costs, infrastructure, health-seeking behaviour etc.	RQ3

Data Item	Details / Notes	Linked Research Question
Key Methodological Approach	Interviews, surveys, participatory mapping, longitudinal assessment, biomonitoring.	RQ4
Systematic Differences Across Countries/Regions	Note any patterns, tendencies, or contrasts documented between countries or continents	All
Identified Gaps / Limitations	Research design gaps, data scarcity, lack of longitudinal follow-up, weak community participation, regional bias etc.	All
Notes / Comments	Additional context, conflicts of interest, funding source	

Instructions:

- Extract all relevant data consistently across studies and grey literature sources.
- Use exact wording for qualitative findings where possible, paraphrase only where necessary for clarity.
- Highlight methodological strengths and weaknesses to inform the methodological mapping component of the synthesis.

Appendix V. PRISMA-ScR Compliance Checklist

PRISMA-ScR Checklist

Section / Item	Checklist Item	Reported (Yes/No)	Page / Location
Title	Identify the report as a scoping review.	Yes	1
Abstract	Structured summary of background, objective, eligibility, sources, charting, synthesis.	Yes	2
Introduction	Rationale for the review.	Yes	3-6
Research Questions	Explicit statement of research questions.	Yes	6-7
Methods: Eligibility	Eligibility criteria (population, concept, context, study type).	Yes	7-8
Methods: Sources	Information sources (databases, grey literature including policy/advocacy sources).	Yes	9-10
Methods: Search	Full search strategy for at least one database provided in Appendix I.	Yes	9
Methods: Selection	Selection of sources of evidence (two-stage process, calibration, disagreement resolution).	Yes	9
Methods: Data Extraction/Charting	Data extraction & charting process and cross-reference to research questions.	Yes	10-11
Methods: Synthesis	Synthesis approach: descriptive mapping	Yes	11
Results	PRISMA-ScR flow diagram; characteristics of sources; synthesis of results.	Yes	10-11
Discussion	Summary of evidence; limitations; and implications for research, policy, and practice.	Yes	11-12
Funding	Sources of funding declared (Petroleum Technology Development Fund, PTDF).	Yes	13

Instructions:

- Complete the checklist during manuscript preparation to ensure compliance with PRISMA-ScR standards.
- Page numbers should reflect the final draft layout.
- Mark 'Yes' once each item is fully reported in the manuscript.

Statements and Declarations

Funding

Petroleum Technology Development Fund (PTDF), Nigeria.

Potential competing interests

No potential competing interests to declare.

Authors' contributions

Conceptualization: AP with added ideas from LD, and PA; **Project Administration:** AP; **Resources:** AP, LD, and PA; **Supervision:** LD and PA; **Writing: Drafts:** AP with feedback from LD and PA.

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5. ^ΔOkafor-Yarwood I (2018). "Pollution, Fisheries and Food (In) Security in the Gulf of Guinea." In *Symposium: 'Transnational Food Security', Transnational Legal Theory*. Vol. 9.
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