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REVIEWER'S REPORT

Manuscript No.: IJAR- 58613

Title: ***Environmental and Health Impacts of Illegal Gold Mining in the Bouaflé Department*.**

Recommendation:
Accept as it is .....
Accept after moderate revision.....
Accept after major revision
Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: **ANAPANA GOPAL**

Reviewer's Comment for Publication.

General Comments

This manuscript investigates the environmental and public health impacts of illegal artisanal gold mining in the Bouaflé Department of Côte d'Ivoire. The study focuses on occupational diseases, environmentally related illnesses, and risky behaviors among gold miners and surrounding communities using field surveys, questionnaires, interviews, and literature review. The topic is highly relevant because illegal artisanal mining has become an important environmental and public health issue in many developing countries.

The manuscript presents valuable field-based information and highlights important public health concerns. However, substantial improvements are needed in study design description, statistical analysis, interpretation of findings, language quality, data presentation, and scientific discussion before the manuscript is suitable for publication.

Minor Comments

1. Study novelty should be better established

Although the topic is important, the manuscript does not clearly explain how this study differs from previous research conducted in Côte d'Ivoire or other African mining regions.

The Introduction should clearly identify:

- the existing knowledge gap;
- why Bouaflé represents an important study area;
- the novel contribution of the present research.

2. Methodology requires greater detail

The methodology lacks sufficient information for reproducibility.

The authors should describe:

- questionnaire validation;
- ethical approval and informed consent procedures;

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- inclusion and exclusion criteria;
- reliability testing of survey instruments;
- interviewer training;
- limitations of purposive sampling.

These additions would improve the scientific rigor of the study.

3. Statistical analysis is inadequate

The manuscript mainly reports descriptive percentages without statistical testing.
The authors should consider including:

- Chi-square tests;
- logistic regression or multivariate analysis;
- confidence intervals;
- measures of association;
- significance levels (*P*-values).

This would strengthen the conclusions regarding relationships between mining activities and health outcomes.

4. Health outcomes are based on self-reported information

Most disease prevalence data appear to originate from questionnaires rather than clinical diagnosis.
The authors should clearly acknowledge that:

- diseases are self-reported;
- no medical confirmation was performed;
- recall bias may influence results.

This limitation should be discussed explicitly.

5. Environmental assessment is incomplete

The manuscript frequently attributes diseases to environmental pollution caused by mercury and cyanide.
However, no environmental measurements are presented.
The study would be strengthened by including:

- water quality analyses;
- soil contamination data;
- mercury concentrations;
- cyanide measurements;
- air quality monitoring.

If these analyses were beyond the study scope, this limitation should be acknowledged.

6. Discussion should better distinguish association from causation

The manuscript often implies that mining activities directly caused specific diseases.
Since the study is observational and cross-sectional, conclusions should be expressed more cautiously as associations rather than causal relationships.

7. More recent literature should be incorporated

Many cited references are relatively old.
The Discussion should include recent literature (2020–2025) concerning:

- artisanal gold mining;

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- mercury exposure;
- occupational health;
- environmental contamination;
- public health interventions.

8. Policy recommendations need strengthening

The manuscript identifies significant environmental and health challenges but provides only limited practical recommendations.

The authors should propose:

- mercury reduction strategies;
- occupational safety measures;
- environmental rehabilitation;
- community health surveillance;
- health education programs;
- stronger regulatory enforcement.

Specific Comments

Abstract

The abstract summarizes the objectives and principal findings.

However, it should include:

- sample size;
- key quantitative findings;
- statistical methods;
- Minor recommendations.

Introduction

The Introduction provides useful background.

However:

- the research gap should be more explicit;
- additional recent international literature should be included;
- the study objectives should be presented more clearly.

Materials and Methods

The study design is understandable but requires clarification regarding:

- sampling justification;
- questionnaire development;
- ethical approval;
- data quality control;
- statistical software and analytical methods.

Results

The Results are clearly organized into occupational, environmental, and behavioral health effects.

However:

- avoid repeating numerical values in both text and tables;
- report statistical significance where appropriate;
- improve table formatting for readability.

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Discussion
The Discussion cites relevant African studies but remains largely descriptive.
It should include:
- mechanisms of mercury toxicity;
- long-term environmental exposure;
- comparison with WHO guidelines;
- implications for sustainable mining management;
- broader public health significance.

Conclusion
The Conclusion summarizes the findings effectively.
However, it should also include:
- study limitations;
- recommendations for future research;
- implications for policymakers and environmental authorities.

References and Citations
The manuscript cites relevant regional literature.
However:
- several references are outdated;
- duplicate references are present (e.g., Maylis et al. 2015 and Ronald 2003 appear twice);
- formatting is inconsistent;
- several citations contain typographical and spacing errors.

The reference list should be carefully revised and updated.

Language and Presentation
The manuscript requires **Minor English language editing**.
Numerous issues include:
- grammatical errors;
- inconsistent capitalization;
- spelling mistakes;
- awkward sentence construction;
- inconsistent terminology;
- formatting inconsistencies.

Examples include:
- "Heath problems" instead of "Health problems";
- "Illégal" instead of "Illegal";
- inconsistent spacing and punctuation;
- repeated figure numbering;
- typographical errors throughout the manuscript.

Professional English editing is strongly recommended.

Strengths
- Addresses an important environmental and public health issue.
- Field-based investigation involving mining communities.
- Covers occupational, environmental, and behavioral health risks.
- Includes multiple stakeholder groups.

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- Practical relevance for environmental management and public health policy.
- Useful regional case study for West Africa.

Weaknesses

- Limited methodological detail.
- Absence of inferential statistical analysis.
- No environmental contamination measurements.
- Reliance on self-reported health outcomes.
- Discussion requires deeper scientific interpretation.
- Numerous language and formatting issues.
- Reference list contains duplicates and inconsistencies.

Final Recommendation

The manuscript addresses a highly relevant issue concerning the environmental and health impacts of illegal artisanal gold mining in Côte d'Ivoire and provides valuable field observations from affected communities. Nevertheless, important improvements are required in the methodology, statistical analysis, interpretation of findings, environmental evidence, language quality, and overall presentation. Addressing these concerns will substantially improve the scientific rigor and impact of the study.

Final Decision: Minor Revision.