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REVIEWER'S REPORT

Manuscript No.: IJAR- 57919

Title: Assessment of the Quality and Potability of Groundwater from Boreholes in the Peripheral Areas of Niamey.

Recommendation:
Accept as it is .....
Accept after minor 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

The manuscript investigates the physicochemical quality and potability of groundwater from boreholes located in peri-urban areas of Niamey, Niger. The topic is important because groundwater constitutes a major source of drinking water for rapidly growing urban populations where access to treated water remains limited. The study provides useful baseline information on several physicochemical parameters and compares them with WHO drinking water standards. However, the manuscript requires substantial improvements in methodology, statistical analysis, discussion, and language quality before publication.

Content and Originality

Strengths

- Addresses a significant public health and environmental issue.
- Focuses on groundwater quality in a rapidly urbanizing region where monitoring data are limited.
- Evaluates multiple physicochemical parameters relevant to drinking water quality, including pH, TDS, conductivity, turbidity, nitrates, nitrites, chlorides, fluorides, sulfates, iron, and hardness.
- Findings have practical implications for local water management and public health.

Concerns

- Similar groundwater quality assessments have been widely reported in the literature; therefore, the novelty should be better emphasized.
- The manuscript focuses only on physicochemical parameters and does not include microbiological analyses, which are essential for determining overall drinking water safety.
- The discussion remains largely descriptive and lacks deeper interpretation of the hydrogeochemical processes controlling water quality.

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Suggestions
- Clearly state the unique contribution of the study.
- Discuss the hydrogeological factors influencing groundwater chemistry.
- Include microbiological assessment or acknowledge its absence as a Minor limitation.

Technical Quality
Strengths
- Sampling and laboratory procedures are briefly described.
- WHO standards are used as benchmarks for evaluating water quality.
- Results are presented for several important water quality indicators.

Minor Concerns
- Only eight boreholes were sampled, which may not adequately represent the groundwater quality of the study area.
- The sampling period is not clearly specified.
- No statistical analysis is provided.
- Measures of variability (mean, standard deviation, confidence intervals) are absent.
- No water quality index (WQI) or multivariate analysis is conducted.
- Seasonal variation is not considered.
- Quality assurance and quality control (QA/QC) procedures are not discussed.

Suggestions
- Include descriptive statistics and appropriate statistical tests.
- Explain sampling frequency and timing.
- Add QA/QC information.
- Consider calculation of a Water Quality Index (WQI).

Language and Presentation
Minor Revision Required
The manuscript contains numerous grammatical, typographical, and formatting issues.
Examples include:
- Inconsistent spacing and punctuation.
- Repeated wording.
- Several awkward sentence constructions.
- Figure captions require standardization.

Although the overall meaning is understandable, substantial English language editing is necessary to improve readability and scientific presentation.

Suggestions
- Conduct professional language editing.
- Ensure consistency in terminology and formatting throughout the manuscript.

Structure and Organization
Strengths
- The manuscript follows a conventional scientific structure including Introduction, Materials and Methods, Results and Discussion, and Conclusion.

Concerns

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- Results and discussion are merged but discussion is limited.
- Interpretation of findings is often superficial.
- Figures are presented individually for each parameter, leading to unnecessary length.
- No summary table comparing measured values with WHO standards is provided.

Suggestions

- Include a comprehensive summary table of all parameters and WHO guideline values.
- Strengthen the discussion by comparing findings with previous studies from Niger and other African countries.
- Reduce repetition in the results section.

References and Citations

Strengths

- References cover water quality, public health, and groundwater contamination topics.

Concerns

- Several references are relatively old.
- Some citations are incomplete or inconsistently formatted.
- More recent peer-reviewed studies on groundwater quality assessment should be included.
- WHO references should be cited consistently using the latest available guidelines.

Suggestions

- Update the literature review with recent studies (2020–2025).
- Ensure uniform reference formatting according to journal guidelines.

Overall Recommendation

The manuscript presents useful baseline data on groundwater quality in peri-urban Niamey and highlights concerns related to fluoride, hardness, turbidity, and mineralization in specific boreholes. However, limitations in sampling design, lack of statistical analysis, absence of microbiological assessment, and language deficiencies reduce the scientific strength of the study. Significant revisions are necessary before publication.

Final Decision:
Minor Revision