

REVIEWER'S REPORT

Manuscript No.: IJAR-58958

Title: Urinary tract infections caused by extended-spectrum beta-lactamase-producing Enterobacteriaceae in patients treated at Abass Ndao Hospital Centre from April 2020 to December 2024.

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after **major revision**

Do not accept (*Reasons below*)

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

Reviewer's ID: JPR- Dr. G. Renuka

Detailed Reviewer's Report

Reviewer Comments

Overall assessment:

The manuscript addresses an important and clinically relevant issue, namely urinary tract infections caused by ESBL-producing Enterobacteriaceae and their antimicrobial resistance profiles. The five-year retrospective dataset from Abass Ndao Hospital Center provides potentially valuable epidemiological information. However, substantial clarification and revision are required before the manuscript can be considered for publication.

Major Comments

1. Study period inconsistency

The title and abstract indicate a study period from **April 2020 to December 2024**, which represents approximately 4 years and 9 months, whereas the Methods section describes it as a **four-year period**. Please correct this inconsistency throughout the manuscript.

2. Clarify the study objective

The Introduction appears to end abruptly at "The general objective of this study is to evaluate the susceptibility profile...". Please provide the complete objective and, preferably, state the **primary and secondary objectives** clearly.

3. Definition of UTI

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The manuscript states that 779 samples met the criteria for Enterobacteriaceae-associated UTI, but the precise microbiological and clinical criteria used to define UTI are not adequately described.

Please provide the **urine culture positivity threshold/colony count**, criteria for significant bacteriuria, and whether pyuria or clinical symptoms were considered.

4. Clarify the denominator used to calculate prevalence

The manuscript reports **779/5,277 (15%)** Enterobacteriaceae-associated UTIs and **260 ESBL producers (33%)**. Please state explicitly whether the 33% represents **260/779** and whether this is the prevalence among all Enterobacteriaceae isolates or among all urine samples.

Please consistently distinguish between **culture positivity, Enterobacteriaceae prevalence, and ESBL prevalence**.

5. Patient selection and possible duplication

Because this is a retrospective, laboratory-based study, please clarify whether you included multiple urine samples from the same patient.

Please indicate whether only the **first isolate per patient/episode** was analysed or whether repeated isolates were retained. Failure to address this may introduce selection bias.

6. ESBL detection method

The manuscript must provide a detailed description of how ESBL-producing organisms were identified.

Please specify the **phenotypic or automated method**, screening antibiotics, confirmatory test, interpretation criteria, and guideline used (e.g., CLSI or EUCAST).

If molecular confirmation was not performed, please explicitly state that ESBL production was determined phenotypically.

7. Antimicrobial susceptibility testing requires clarification

The methodology for the antibiogram contains unusual dilution volumes and should be carefully checked for accuracy and reproducibility.

Please specify the **inoculum standardisation method**, particularly whether a **0.5 McFarland suspension** was used.

Provide the antibiotic concentrations/disc potencies and the exact guideline used for interpretation.

8. Antibiotics tested

The manuscript reports resistance to amoxicillin, amoxicillin-clavulanic acid, ticarcillin, and third-generation cephalosporins, while susceptibility was reported for imipenem, amikacin, colistin, and fosfomycin.

Please provide the **complete list of antibiotics tested**, their concentrations, and the corresponding susceptible/intermediate/resistant percentages.

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9. Colistin susceptibility

The reported **94.85% susceptibility to colistin** requires particular attention because disk diffusion is not considered an appropriate reference method for colistin susceptibility testing in many contemporary standards.

Please specify exactly how colistin susceptibility was determined and discuss the limitations of the method used.

10. Use current antimicrobial susceptibility standards

The manuscript should identify the specific edition/year of **CLSI or EUCAST** used during the study period.

Since the study spans several years, explain whether the interpretive criteria changed during 2020–2024 and how these changes were handled.

11. Statistical analysis is insufficiently described

A retrospective epidemiological study should include a dedicated statistical analysis section.

Please describe the statistical software, descriptive statistics, tests used for categorical variables, significance threshold, and treatment of missing data.

Where appropriate, provide **95% confidence intervals** for major prevalence estimates.

12. Sex ratio needs clarification

The abstract reports a sex ratio of **1.76**, but it is unclear whether this represents males/females or females/males.

Please provide the actual numbers and percentages of male and female patients.

13. Age distribution should be presented

The mean age of 57.4 years is useful but insufficient.

Please provide the **standard deviation, median, range, and/or age categories**. Age-group analysis would strengthen the epidemiological interpretation.

14. Hospitalized versus outpatient patients

The manuscript reports 78% hospitalized and 22% outpatient cases. Please clarify whether ESBL prevalence differed significantly between these groups.

A comparison of resistance profiles between hospitalized and outpatient patients would add considerable clinical value.

15. Species-specific analysis

Since *Escherichia coli* accounted for 65% and *Klebsiella pneumoniae* for 22%, the authors should provide the complete distribution of bacterial species.

ESBL prevalence and antimicrobial resistance should ideally be analyzed **according to bacterial species**.

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16. Temporal trends

Given the long study period, one of the major strengths of the dataset is the possibility of evaluating trends from 2020 to 2024.

Please consider presenting **annual ESBL prevalence and annual antimicrobial resistance rates**. This would substantially strengthen the manuscript.

17. Risk factors are not adequately addressed

The Introduction emphasizes hospitalized and vulnerable patients, but no risk-factor analysis is presented. If the available data permit, analyze factors such as age, sex, hospitalization status, clinical department, previous antibiotic exposure, catheterization, and comorbidities.

18. Clinical departments

Since the hospital contains several relevant departments, please report the distribution of cases by department, particularly **urology, internal medicine, nephrology, pediatrics, and gynecology-obstetrics**, if such data are available.

19. Quality control

The Methods section should describe the quality-control procedures used for bacterial identification and antimicrobial susceptibility testing.

Please mention the **reference quality-control strains** used, if applicable.

20. Urine collection methodology

The urine collection section is excessively procedural for a retrospective laboratory study and includes instructions that may not have been applied uniformly to all patients.

Please distinguish between the **standard institutional urine collection protocol** and what was actually documented in the retrospective records.

21. Potential methodological error regarding culture media

The manuscript mentions CLED and EMB media, but the exact workflow for primary isolation and identification should be described more clearly.

Please state the incubation conditions, duration, colony-counting procedure, and criteria used to select colonies for identification.

22. Biochemical identification section

The descriptions of Simmons citrate, Kligler-Hajna, urease, indole, and oxidase tests are lengthy and somewhat instructional.

For a research article, these sections should be condensed and replaced with a concise description of the **identification algorithm and reference methodology**.

23. Potential inaccuracies in biochemical methodology

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The statement that the colony is homogenized in a drop of sterile urea before inoculation into Kligler-Hajna medium requires verification.

Please carefully review this procedure against the actual laboratory protocol because methodological inaccuracies could affect reproducibility.

24. Data collection

The sentence beginning “A data collection form was designed to systematically extract relevant information, including...” is incomplete.

Please complete this section and list all variables collected.

25. Ethical considerations

The manuscript does not provide information regarding **ethical approval, institutional authorization, confidentiality, or waiver of informed consent** for the retrospective use of patient records.

This information is essential and should be added.

Minor Comments

26. The title should be grammatically revised. A suggested title is:
“Urinary Tract Infections Caused by Extended-Spectrum β -Lactamase-Producing Enterobacteriaceae among Patients Treated at Abass Ndao Hospital Center, Dakar, Senegal, April 2020–December 2024.”
27. Use one terminology consistently: “**Enterobacterales**” may be more appropriate than “Enterobacteriaceae” depending on the organisms included and the taxonomic framework used.
28. The abbreviation **ESBL** should be defined at first use and used consistently thereafter.
29. The abbreviation **UTI** should likewise be defined once and used consistently.
30. “Third-generation cephalosporins” should be listed individually where possible rather than reported only as a group.
31. Please verify the reported **100% resistance** to several antibiotic classes. Such values should be supported by the number of isolates tested and clearly presented in a table.
32. The Results section should include **absolute numbers (n) as well as percentages (%)** throughout.
33. Avoid reporting percentages without denominators. For example, report “260/779 (33.4%)” rather than simply “33%.”
34. Tables should clearly indicate the denominator and number of isolates tested for each antibiotic because the number tested may differ between agents.

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35. The Discussion should compare the observed ESBL prevalence with **recent studies from Senegal, West Africa, and other comparable healthcare settings**, rather than relying mainly on older references.
36. The manuscript should discuss possible explanations for the high resistance rates, including **antibiotic selection pressure, healthcare-associated transmission, plasmid-mediated resistance, and antimicrobial stewardship challenges**, while avoiding unsupported causal claims.
37. The conclusion should not merely repeat the Results. It should emphasize the **clinical implications, antimicrobial stewardship, infection prevention, and need for continued surveillance**.
38. Please carefully proofread the manuscript for **grammar, punctuation, numbering, spacing, and incomplete sentences**. Several sections appear to have been copied from a laboratory practical/protocol format rather than written in the conventional style of a scientific research article.

Recommendation

Major Revision

The study addresses an important antimicrobial-resistance problem and has a potentially valuable dataset. However, the manuscript requires substantial revision, particularly regarding **study-period consistency, UTI and ESBL definitions, antimicrobial susceptibility methodology, statistical analysis, ethical approval, temporal trends, and presentation of microbiological results**. Addressing these issues would considerably improve the scientific validity and publication readiness of the manuscript.