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REVIEWER'S REPORT

Manuscript No.: IJAR-56263

Title: Endodontic Irrigation: From Current Concepts to Future Innovations

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revisionYES.....

Do not accept (*Reasons below*)

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

Reviewer Name: Prof. Dr. Dillip Kumar Mohapatra

Detailed Reviewer's Report

STRENGTHS

1. Highly Relevant Topic

Endodontic irrigation remains a critical determinant of treatment success in:

Root canal disinfection

Biofilm elimination

Prevention of post-operative pain

Long-term periapical healing

The topic is clinically important and widely researched in journals like:

International Endodontic Journal

Journal of Endodontics

Clinical Oral Investigations

This makes the manuscript timely and publishable in scope.

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2. Strong Inclusion of Recent Literature (2023–2025)

The manuscript includes:

Recent RCTs

Systematic reviews

Umbrella reviews

Emerging technologies (plasma, multisonic systems, nanoparticles)

This improves scientific currency.

3. Coverage of Multiple Irrigation Modalities

The manuscript discusses:

Conventional needle irrigation

Passive ultrasonic irrigation

Sonic activation

Apical negative pressure systems

Multisonic systems (e.g., GentleWave System)

Laser-activated irrigation

Plasma-assisted irrigation

This broad coverage enhances completeness.

4. Structured Organization

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If organized properly (mechanism → evidence → clinical implications), it demonstrates logical flow.

WEAKNESSES

1. Inclusion of Irrelevant References

References related to:

3D printing

Clear aligners

Prosthodontics

These do not align with irrigation.

This weakens academic integrity and suggests poor reference curation.

2. Possible Citation Padding

Large number of reviews but fewer:

Multicenter RCTs

Long-term clinical outcome trials

Meta-analyses with pooled quantitative data

A high-impact journal expects stronger evidence hierarchy.

3. Duplication and Formatting Issues

Possible repeated citation (van der Sluis review)

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Inconsistent Vancouver style

Missing DOI

Formatting errors

These suggest lack of final editorial polishing.

4. Limited Critical Analysis

If the manuscript mainly summarizes studies without:

Comparing outcomes quantitatively

Discussing bias

Addressing conflicting evidence

Cost-effectiveness analysis

Then it becomes descriptive rather than analytical.

5. Weak Translational Perspective

Advanced systems like GentleWave System are expensive.

If cost, accessibility, and real-world applicability are not discussed, clinical relevance becomes limited.

SIGNIFICANCE

Clinical Significance

Irrigation determines:

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Bacterial reduction

Smear layer removal

Debris extrusion

Post-operative pain

With increasing complexity of root canal systems, activation technologies are highly significant.

Scientific Significance

Emerging areas:

Plasma medicine

Nanoparticle-enhanced irrigation

AI-assisted irrigation optimization

These are future-facing and publication-worthy.

Public Health Impact

Better irrigation → higher success rate → fewer retreatments → reduced healthcare burden.

Therefore, topic has moderate-to-high clinical significance.

KEY POINTS (Likely Highlights of Your Paper)

Conventional syringe irrigation has limitations.

Ultrasonic activation improves irrigant penetration.

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Sonic and negative pressure systems reduce apical extrusion.

Multisonic systems enhance debris removal in complex anatomies.

Novel technologies (plasma, nanoparticles) show promising preliminary results.

Evidence remains heterogeneous and sometimes contradictory.

More high-quality RCTs are needed.

RECOMMENDATION (Editorial Decision)

Recommendation: MAJOR REVISION

Reasons:

Remove irrelevant references

Correct duplication

Improve formatting

Add critical comparison table

Strengthen evidence hierarchy discussion

Add limitations section

Overall Rating

Criteria	Rating (/10)
Topic Relevance	9
Scientific Depth	6

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Criteria	Rating (/10)
Literature Quality	7
Critical Analysis	5
Formatting	5
Publication Readiness	6

Overall: 6.5/10 (Requires Major Revision)

Final Reviewer Statement

The manuscript addresses a clinically important and timely topic in endodontics. However, the inclusion of irrelevant references, limited critical synthesis, and formatting inconsistencies necessitate major revision before the manuscript can be considered suitable for publication.

JUSTIFICATION FOR MAJOR REVISION

Manuscript: Contemporary Advances in Endodontic Irrigation

TITLE

Issue:

Title is broad and descriptive.

Does not indicate whether it is a narrative review, systematic review, or critical appraisal.

Why Major Revision?

High-quality journals (e.g., International Endodontic Journal) require clarity in study design in the title.

Required Correction:

Specify:

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"Narrative Review"

"Systematic Review"

"Critical Review"

ABSTRACT

Issue 1: Lack of Structured Format

If abstract is not divided into:

Background

Objective

Methods

Results

Conclusion

→ It does not meet indexing standards.

Issue 2: No Mention of Evidence Hierarchy

Does not state number of studies reviewed.

No clarity on inclusion criteria.

No mention of evidence strength.

Why Major Revision?

Abstract is the most indexed and cited part of the paper.

INTRODUCTION

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Line Issue 1: Broad Statements Without Citation

Statements such as:

“Irrigation is the most important step in root canal treatment.”

Require high-level evidence citation (meta-analysis).

Line Issue 2: No Clear Knowledge Gap

The introduction must clearly answer:

What is already known?

What is controversial?

What gap does this review address?

Currently, gap not clearly defined.

Why Major Revision?

Without a defined gap, manuscript lacks novelty.

MATERIALS & METHODS (If Review Article)

Critical Issue:

If this is presented as a review but:

No search strategy described

No database mentioned (PubMed, Scopus, etc.)

No inclusion/exclusion criteria

No PRISMA flow diagram

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Then scientific rigor is insufficient.

PRISMA standards required by journals like

Journal of Endodontics

Why Major Revision?

Lack of methodology reduces credibility and may classify it as unsystematic narrative writing.

LITERATURE REVIEW SECTION

Major Issue 1: Descriptive Rather Than Analytical

Each irrigation technique is described, but:

No quantitative comparison

No risk-of-bias discussion

No heterogeneity discussion

No strength of evidence grading

Example:

Passive ultrasonic irrigation discussed but:

No comparison table with sonic or multisonic systems.

Major revision required to add critical synthesis.

Major Issue 2: Inclusion of Irrelevant References

References 34–43 and 47 (3D printing, aligners, prosthodontics)

→ Not directly related to irrigation.

This raises:

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Reference padding concern

Editorial suspicion

This alone justifies major revision.

Major Issue 3: Duplicate Citation

Possible duplication of:

Van der Sluis review (appears twice).

Indicates lack of final editorial checking.

DISCUSSION SECTION

Line Issue 1: No Cost-Benefit Discussion

Systems like:

GentleWave System

are expensive.

No discussion on:

Accessibility

Economic feasibility

Clinical practicality

This limits real-world relevance.

Line Issue 2: No Discussion of Conflicting Evidence

If some studies show:

No significant difference between activation systems

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But manuscript only highlights positive outcomes

→ Selective reporting bias.

Line Issue 3: No Long-Term Outcome Data Discussion

Short-term bacterial reduction ≠ long-term healing.

No emphasis on:

1-year healing rates

Retreatment rates

Survival analysis

Major scientific gap.

LIMITATIONS SECTION

If absent or minimal:

This is a serious flaw.

Every review must mention:

Study heterogeneity

Sample size limitations

In vitro vs in vivo bias

Publication bias

Absence = major revision.

CONCLUSION

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Issue:

Conclusion may appear stronger than evidence.

If it states:

“Multisonic systems are superior.”

Without high-quality multicenter RCT backing → Overstatement.

Conclusion must be evidence-balanced.

REFERENCES SECTION

Major Problems:

Irrelevant references (3D printing cluster)

Possible duplication

Formatting inconsistencies

Missing DOI

Uneven evidence hierarchy

Reference integrity affects manuscript credibility significantly.

OVERALL SCIENTIFIC CONCERNS

Issue	Severity
Lack of structured methodology	High
Irrelevant references	High
Descriptive review	Moderate - High
Weak critical synthesis	High
Formatting errors	Moderate
Overgeneralized conclusions	Moderate

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Multiple high-severity issues = Major Revision category.

WHY NOT MINOR REVISION?

Minor revision is given when:

Scientific content is strong

Only language/format issues exist

Here:

Structural issues present

Methodology unclear

Analytical depth insufficient

Reference integrity concerns

Therefore → **Major Revision justified**

EDITORIAL STYLE FINAL COMMENT

The manuscript addresses a relevant and timely topic in endodontics; however, significant structural, methodological, and reference-related issues must be addressed. A major revision is required to enhance scientific rigor, remove irrelevant citations, strengthen analytical synthesis, and ensure alignment with journal standards.