

## Comparative Analysis of Postoperative Pain in Single-Visit vs. Multiple-Visit Non-Surgical Root Canal Treatment: A Clinical Data Case Study from Kolhapur City

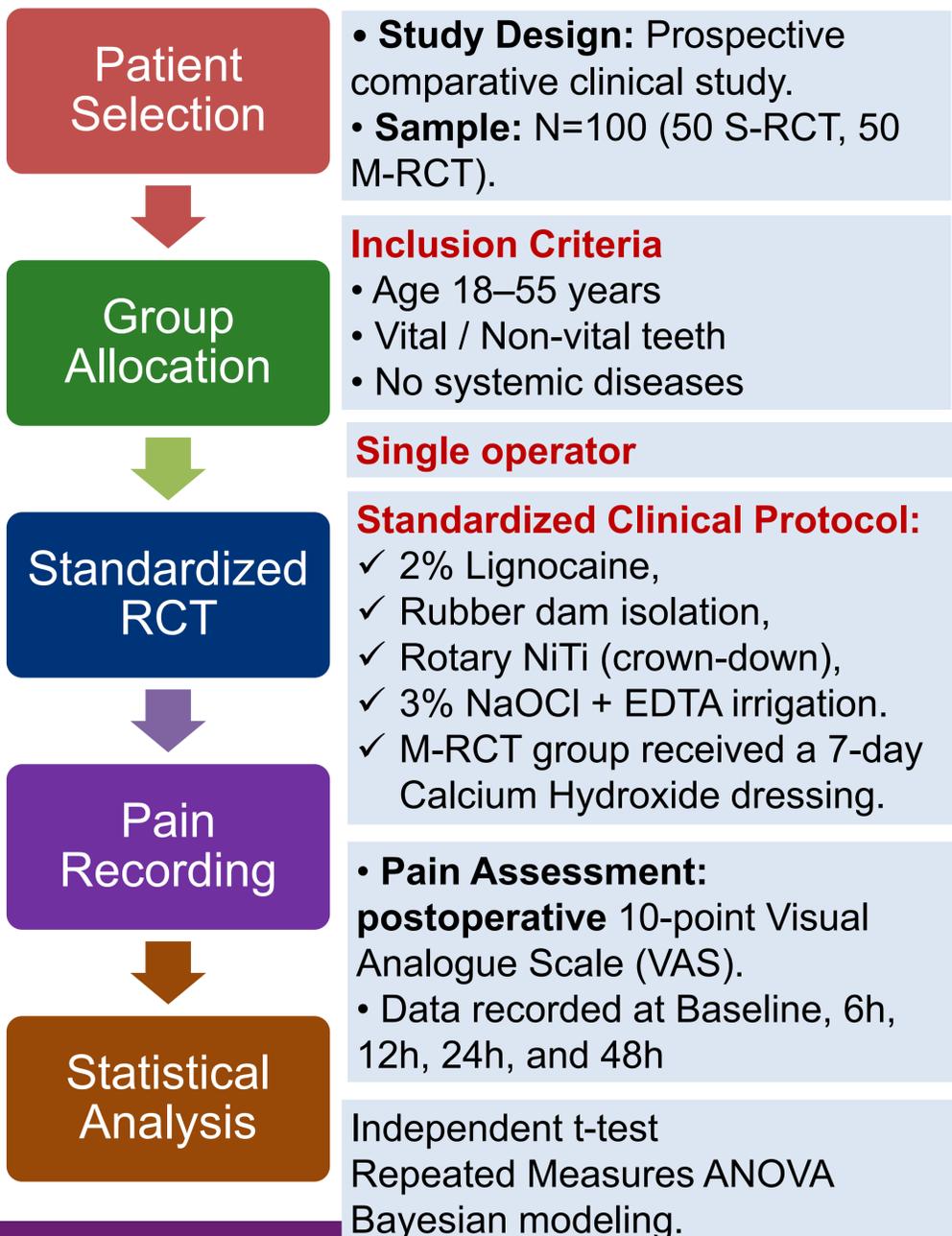
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### INTRODUCTION & AIM

- **Postoperative pain** is one of the most critical determinants of patient perception and acceptance of Root Canal Treatment (RCT).
- **Clinical shift:** Modern rotary instrumentation and irrigation have shifted the focus toward single-visit RCT (S-RCT).
- **Research Gap**
  - Limited **region-specific clinical data** evaluating postoperative pain in the Kolhapur population.
  - Most existing studies rely solely on **frequentist statistical methods (p-values)**.
  - There is a lack of **probability-based interpretation**, which is more clinically meaningful for decision-making.
- **Aim**  
To evaluate postoperative pain following S-RCT vs. M-RCT using both conventional frequentist methods and Bayesian probabilistic modeling.

### METHOD



### RESULTS & DISCUSSION

Time	S-RCT	M-RCT
6h	2.8	3.1
12h	3.5	3.8
24h	2.4	2.8
48h	1.2	1.4

Table no.1

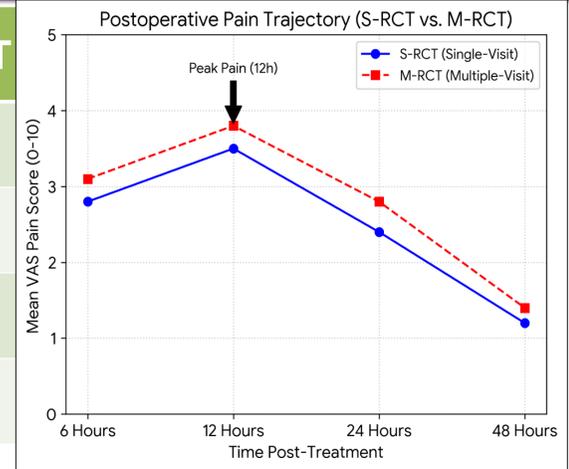


figure no.1

### Bayesian probabilistic modeling.

Parameter	Value	Meaning
Posterior Mean Difference	<b>-0.45</b>	S-RCT lower pain
95% Credible Interval	-1.20 to 0.30	True difference
<b>Probability S-RCT ≤ M-RCT pain</b>	<b>87.5%</b>	High clinical confidence

Table no.2

- ✓ No significant difference in postoperative pain  $p > 0.05$
- ✓ Pain peaked at 12 hours in both groups
- ✓ 87.5% probability S-RCT causes equal or less pain
- ✓ Pain difference not clinically meaningful ( $< 1$  VAS unit)

### Why single visit RCT (S-RCT) is effective?

- Immediate obturation & coronal seal
- Reduced interappointment contamination risk
- Modern chemomechanical preparation
- Comparable pain outcomes
- Improved efficiency & patient comfort

### CONCLUSION

**single-visit RCT is a scientifically justified and clinically acceptable approach** for non-complicated endodontic cases when proper case selection, aseptic technique, and modern instrumentation protocols are followed.

### FUTURE WORK/ REFERENCES

Integrate **CBCT** for volumetric healing assessment and conduct multicenter Bayesian clinical trials.

- Kamath DG, Varughese BK, Gomez TW, Lembai S, V Gibi M, Eldho J. Postoperative pain after single and multiple visits for root canal therapy in necrotic teeth. *Bioinformation*. 2025 Jul 31;21(7):2157-2160.
- Kumar G, Jena S, Manila N, Fareed M, Karobari MI. Incidence of postoperative pain after single-visit and multiple-visit root canal therapy: a systematic review. *BMC Oral Health*. 2025 Jan 8;25(1):47.