



ADVANCING EDUCATION
AND ORAL HEALTH



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Implementation of a Newly Developed Radiology App as a Teaching Method for the Diagnosis of Caries Lesions and Periodontal Disease

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#1

Background

Diagnostic challenges in caries and periodontal disease

#2

Study Design

Randomised pilot: AI:Dental app vs. conventional training

#3

Results

Primary outcome, sub-domain findings, and semester effects

#4

Discussion & Conclusion

Strengths, limitations, and recommendations

01

Background

Dental caries and periodontal disease are among the most common chronic conditions worldwide. Early, accurate diagnosis is essential, yet undergraduate diagnostic training relies heavily on conventional, non-interactive materials.





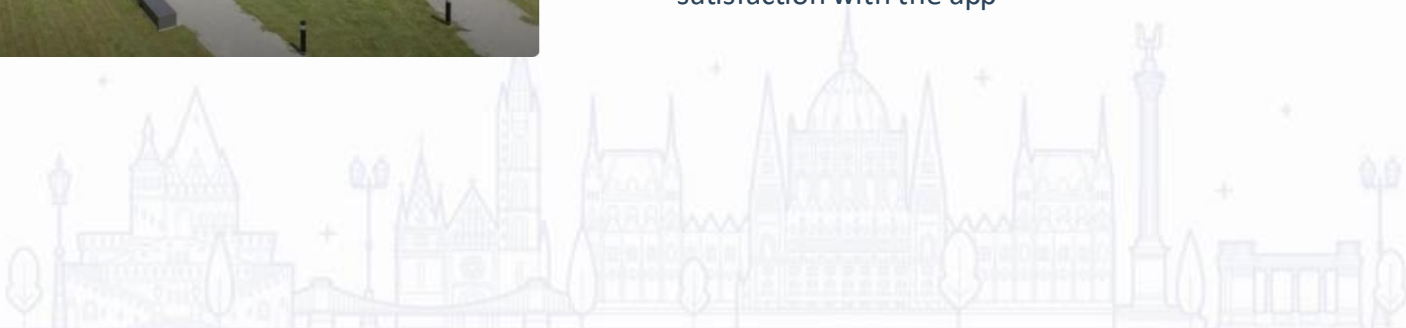
UNIVERSITY CLINIC OF DENTISTRY
MEDICAL UNIVERSITY OF VIENNA



Aims & Objectives

This pilot study set out to:

1. Compare diagnostic performance between AI-assisted and conventional teaching
2. Examine differences across caries/periodontal sub-domains and training phases
3. Assess usability, learning gain, curriculum fit, and satisfaction with the app



Study Groups

Test Group (n = 70)

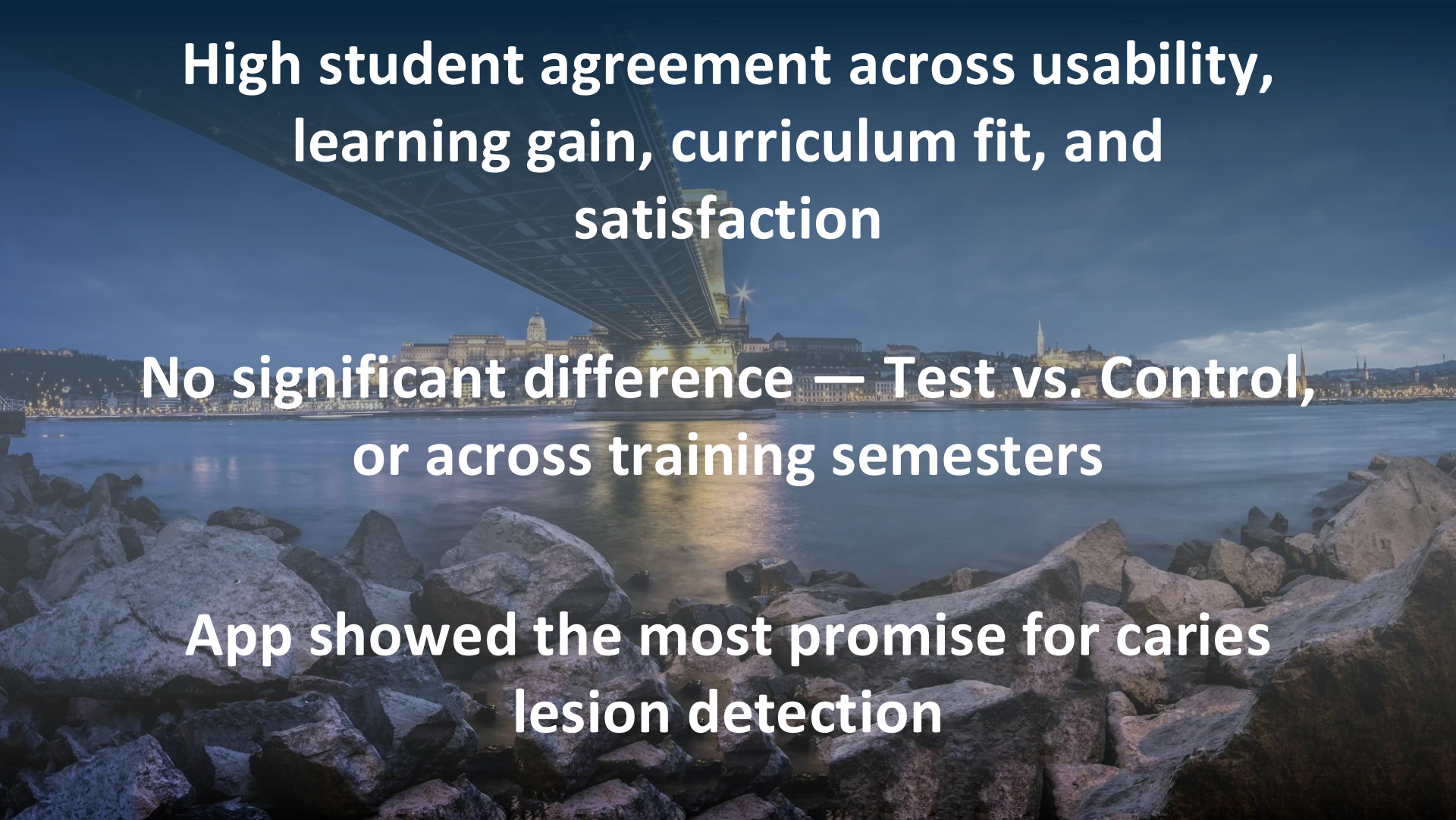
AI:Dental app, on-site and remote access, 4-week self-directed practice



Control Group (n = 70)

Conventional digital practice materials, 4-week self-directed practice





**High student agreement across usability,
learning gain, curriculum fit, and
satisfaction**

**No significant difference — Test vs. Control,
or across training semesters**

**App showed the most promise for caries
lesion detection**

#1

Caries / A ▲

Test group significantly outperformed Control (GLM, adj. for semester)

#2

Periodontal Extent

△

Slight trend favouring Test group (not statistically significant)

#3

Periodontal Grading

No group effect; improves significantly by semester (9–12 > 7–8)

Key Sub-domain Results

Performance by Training Semester



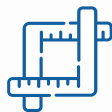
Perio Grade

Semesters 9–12 significantly outperform Semesters 7 & 8



Caries A

Semester 8 outperforms both Semester 7 and Semesters 9–12



Learning Curve

Non-linear pattern — semester effects vary by diagnostic sub-domain



Participant Flow

n

Invited

~300 students

Randomised

140 (70 Test / 70
Control)

Excluded

80 (32 withdrew; 48
incomplete/unclear
group)

Analysed

60 (42.86% of
randomised)

Discussion & Conclusion



Caries Detection

Significant benefit for the Test group, adjusted for semester



Periodontal Grading

Driven by clinical training phase, not app use



Student Acceptance

High satisfaction and willingness to recommend the app



Attrition

High attrition (60/140 analysed) limited statistical power



Flexible Learning

Supports self-directed, remote diagnostic practice



Future Research

Larger, multi-centre studies recommended to confirm findings



Thank You

Questions welcome

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