Quantitative Assessment of Dental Students' Attitudes and Perspectives on Virtual Pediatric Diagnosis and Treatment Planning Case Exercises

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Introduction

With advancing technology and the impact of COVID-19, virtual patients have become a key tool in dental education [1]. The University of Oslo introduced a seminar model for teaching radiographic caries detection and treatment planning [2]. At NYUCD, case-based exercises are integral to preclinical pediatric dental training before direct patient care. In these exercises, students analyze de-identified oral images and radiographs with case narratives, diagnosing and planning treatments—a model called "Virtual Diagnosis and Treatment Planning" (VDTP). VDTP helps students refine clinical decision-making, diagnostic skills, and treatment planning. These exercises are reviewed daily before patient care in the pediatric clinic. However, research on students' perceptions of VDTP's effectiveness is limited. Evaluating its role in NYUCD's curriculum could inform improvements in virtual learning tools to better prepare future dentists.

Methods

Attitudinal surveys administered online for quality improvement purposes in the beginning and at the end of pediatric dental rotations to current D3 and D4 predoctoral dental students in Spring 2024 and Fall 2024 semesters. Survey questions assessed students' attitudes and perceptions of VDPT exercises given during D3 and D4 Pediatric dental rotations at NYUCD. The self-administered surveys also contained student acceptability of the VDTP exercises as they were more broadly introduced into the curriculum. The survey responses were collected via likert scale of 1-5. This study required the linkage of pre- and post-surveys collected in NYU Qualtrics. Data was analyzed using paired sample T-Test-Wilcoxon.

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Results

Figure 1: Class of 2025 vs. Class of 2024

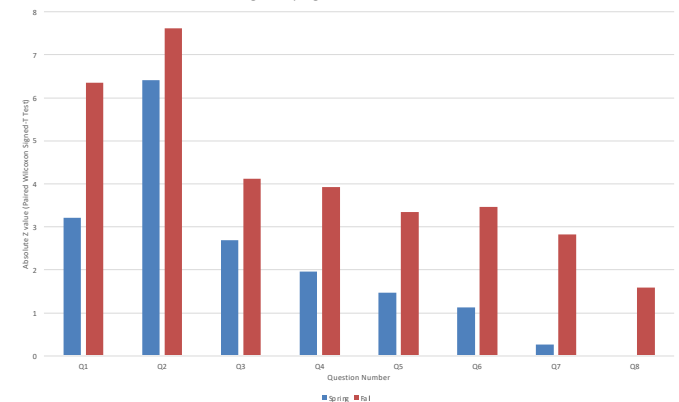Figure 2: Spring Semester vs. Fall Semester
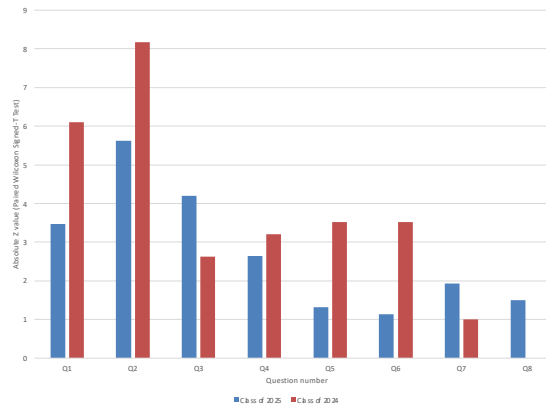
366 Surveys Analyzed:
- Class of 2025: 197 students
  - Statistically significant in Q1,2,3,4,7
  - Statistically not significant in Q5,6,8
- Class of 2024: 169 students
  - Statistically significant in Q1,2,3,4,5,6
  - Statistically not significant in Q7,8

366 Surveys Analyzed:
- Spring semester: 194 students
  - Statistically significant in Q1,2,3,4
  - Statistically not significant in Q5,6,7,8
- Fall semester: 172 students
  - Statistically significant in Q1,2,3,4,5,6,7
  - Statistically not significant in Q8

Conclusions

The findings of this study suggest that VDTP exercises play a crucial role in enhancing dental students' confidence and competency in diagnosis and treatment planning. The data indicate positive student perceptions regarding the effectiveness of VDTP in reinforcing clinical decision-making and preparing them for patient care. However, areas for improvement remain, particularly in optimizing the exercises to better align with real-world clinical scenarios. Future research should explore ways to refine virtual case-based learning to further support student engagement and skill development in pediatric dentistry.

References

[1] Cederberg RA, Bentley DA, Halpin R, Valenza JA. Use of virtual patients in dental education: a survey of U.S. and Canadian dental schools. J Dent Educ. 2012 Oct;76(10):1358-64. PMID: 23066135.
[2] Young A, Skudutyte-Rysstad R, Torgersen G, Giertsen E. Teaching Radiographic Caries Detection and Treatment Planning: A Seminar Using an Audience Response System. Caries Res. 2022;56(3):226-233. doi: 10.1159/000526109. Epub 2022 Jul 20. PMID: 35858539; PMCID: PMC9808714.