Comparison of in-person and remote pediatric dentistry lectures before and during the COVID-19 pandemic

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Funding information
Health Resources and Services Administration, Grant/Award Numbers: HRSA-17-068, D85HP30835

1 | PROBLEM

The Early Childhood Oral Health Training program (EChOTrain) provides enhanced pediatric dentistry training for pre-licensure dental hygiene students. Enrolled students are taught to provide preventive and restorative care to children aged 0-5 years. Upon graduation, hygienists are equipped to perform their full scope of practice in the pediatric context.

EChOTrain didactic content was originally delivered in a series of 10 traditional in-person lectures (Table 1). The coronavirus disease 2019 (COVID-19) pandemic forced our faculty to rapidly pivot from in-person to synchronous remote delivery of the EChOTrain content. This was facilitated by video conferencing software (Zoom, San Jose, CA). Today e-materials, recorded lectures, and the flipped classroom are increasingly popular,¹ and objective measures of student performance can be similar with synchronous in-person and asynchronous video lecture.²,³ However, to our knowledge research comparing in-person versus remote videoconference lecture is limited.⁴

2 | SOLUTION

A 2019 and 2020 cohort of second-year prelicensure dental hygiene students were enrolled in EChOTrain. Students each received 10 pediatric dentistry lectures. The 2019 cohort (n = 8) received all content via in-person lecture. The 2020 cohort (n = 29) received all content via synchronous remote lecture. Prior to the beginning of the program, and after completion of the lecture series, students completed an itemized pre and post-assessment survey to gauge readiness to perform pediatric preventive and restorative hygiene procedures. Self-assessments were scored on a numerical Likert scale. Student responses were collected and deidentified. Means and standard deviations were calculated for each question using MS Excel. This study was determined to be exempt by the institutional review board (STUDY00011742).
Table 2: Self-assessed readiness to treat pediatric patients: Second-year prelicensure dental hygiene students

|                          | Synchronous in-person Lecture | Synchronous remote lecture |
|--------------------------|------------------------------|----------------------------|
|                          | Pre-course assessment Mean (SD) | Post-instruction Mean (SD) | Pre-course assessment Mean (SD) | Post-instruction Mean (SD) |
| Perform knee-to-knee exam | 2.75 (1.04)                  | 4.63 (0.52)                | 3.52 (1.18)                  | 4.28 (0.84)                |
| Assess caries risk       | 2.63 (0.92)                  | 4.00 (0.53)                | 3.90 (0.77)                  | 4.45 (0.57)                |
| Diet and nutrition       | 3.13 (0.83)                  | 4.63 (0.52)                | 3.69 (1.23)                  | 4.52 (0.51)                |
| Anticipatory guidance    | 2.34 (0.52)                  | 4.13 (0.99)                | 3.55 (1.09)                  | 4.17 (0.97)                |
| Overall readiness to provide care to child age 0-5 | 1.63 (0.92)                  | 4.00 (0.00)                | 2.24 (0.99)                  | 3.69 (0.76)                |

Overall Readiness for Independent Practice

![Overall Readiness for Independent Practice](image)

Figure 1: Pre/post instruction readiness for independent practice

3 | RESULTS

3.1 | What went well

Synchronous remote lecture was well received by students, and it facilitated delivery of all course content. In addition, it allowed us to expand training from 8 students in 2019 to 29 in 2020. Both cohorts reported improved post-instruction readiness for independent clinical practice for all measures. Standard deviation for post-instruction scores was generally lower, indicating reduced variation in readiness compared with pre-assessment (Table 2). Measures were limited by the small sample size and the nature of self-report; however, they are encouraging evidence that remote lectures were effective in teaching course content (Figure 1).

3.2 | What did not go so well

Early on, instructors experienced technical challenges with the software, and some students suffered connectivity issues that interfered with their ability to participate. Instructors perceived lack of rapport when students turned off their video or were unable to approach instructors privately after class as in an in-person session. However,
engagement generally remained strong, and it appears some students are more likely to participate in discussion online than they would be in-person.

### 3.3 Lessons learned

Shelter-in-place orders challenged us to share space with roommates, family, and children. The resulting interruptions and lack of privacy are problematic for synchronous remote lectures. Internet bandwidth and connectivity also affect access. To provide learners with greater flexibility and convenience, we will pre-record lectures for asynchronous delivery in the coming year. In addition, we will schedule virtual “office hours” to provide an opportunity for missed one-on-one interactions. Based on this experience, we believe synchronous remote lecture will play a role in the future of dental education.

### ACKNOWLEDGMENTS

Research supported by Health Resources and Services Administration (HRSA-17-068), Grant number D85HP30835

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**How to cite this article:** Nelson T, Nelson G, Rothen M, Kim A. Comparison of in-person and remote pediatric dentistry lectures before and during the COVID-19 pandemic. *J Dent Educ*. 2021;85(Suppl. 3):1917–1919. [https://doi.org/10.1002/jdd.12532](https://doi.org/10.1002/jdd.12532)