

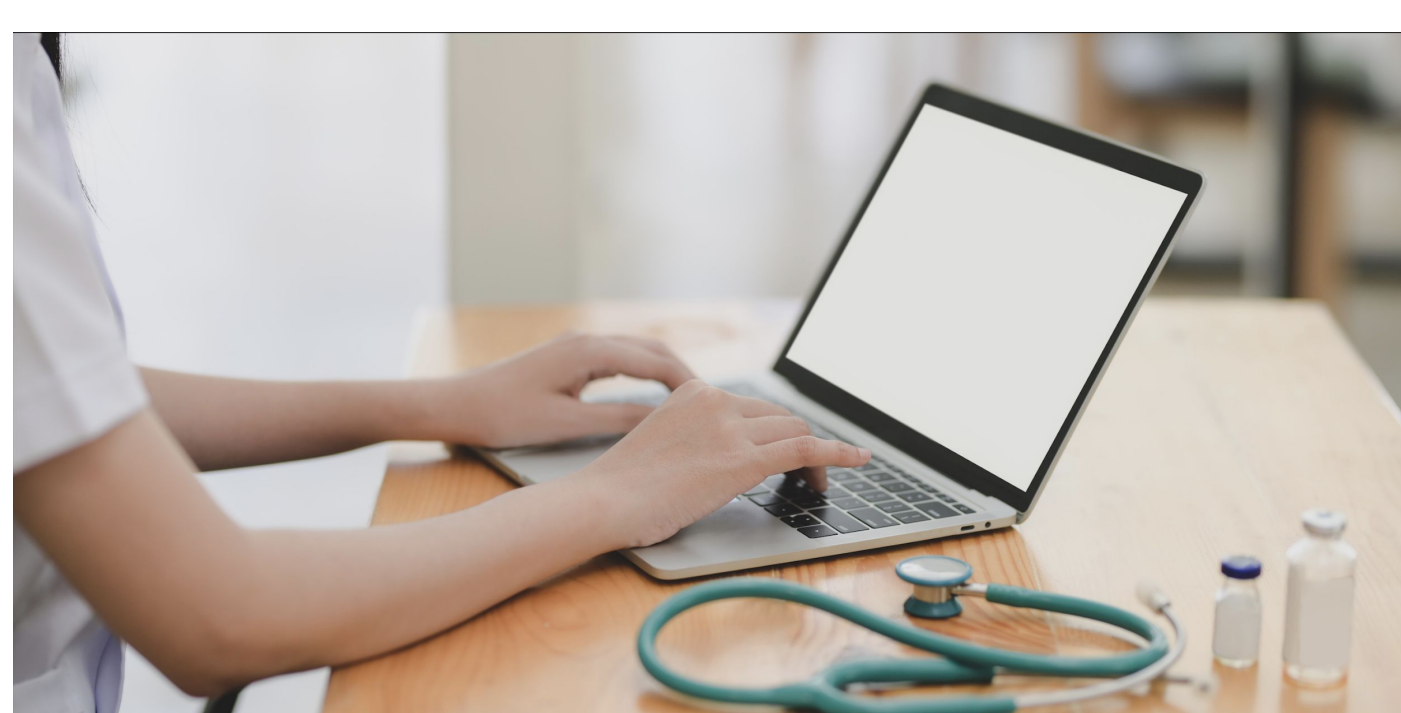


# The Potential of Teledentistry in Community Oral Health for the Pediatric Population

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## INTRODUCTION

- Dental caries is the most prevalent chronic disease of childhood in the US.<sup>2,4</sup>
- Young children are a particularly vulnerable population because of their dependence, inability to communicate needs, and relative poverty.<sup>4</sup>
- Furthermore, this can be exacerbated by disparities such that an increased rates of caries are observed in children who are of low socioeconomic status and minority backgrounds.<sup>4</sup>
- However, community oral health screenings can play a vital role in childhood caries as a predominately preventable disease.<sup>4</sup>
- The current emphasis on social distance during the COVID-19 pandemic has brought attention to teledentistry, which may have a valuable role in the future of community oral health outreach.



## OBJECTIVE

- Assess EBD teledentistry, an emerging component of the health care delivery system, as one method to engage dental students in pediatric community oral health projects given the long-standing impact on dental education and dental practices of COVID-19 disease and regulations.
- Determine “best practices” of teledentistry focused on benefits, role and challenges as utilized in a dental school student-operated volunteer community service organization: **Student Community Outreach for Public Education (SCOPE) program.**

## METHODS

- A literature search was conducted to evaluate the efficacy of teledentistry in providing pediatric oral health screenings and how it may potentially benefit community oral health.

## TABLE 1

	Kopycka-Kedzierawski et al. <sup>2</sup>	Amável et al. <sup>1</sup>	Subbalekshmi et al. <sup>3</sup>
<i>Subjects</i>	<ul style="list-style-type: none"> <li>291 Preschoolers</li> <li>12-60 months old</li> </ul>	<ul style="list-style-type: none"> <li>66 Kindergarteners</li> <li>4-6 years old</li> </ul>	<ul style="list-style-type: none"> <li>318 Children</li> <li>3-6 years old</li> </ul>
<i>Methods</i>	<ul style="list-style-type: none"> <li>2 groups (teledentistry exam group, traditional clinical exam group) completed decayed, filled teeth scores for child at baseline, 6-month follow up, and 12-months follow up.</li> </ul>	<ul style="list-style-type: none"> <li>4 remote examiners completed diagnostic questionnaires based on 3 intraoral photos for each subject, results were compared to 1 in-person examiner who served as the gold standard for dental diagnosis.</li> </ul>	<ul style="list-style-type: none"> <li>2 examiners (intra-examiner: visual method, inter-examiner: digital photograph by intra-oral camera) completed decayed, missing, filled teeth scores for the subjects.</li> </ul>
<i>Results</i>	<ul style="list-style-type: none"> <li>The mean scores between the groups were not significant at baseline and 6-month follow up. However, they were significantly different at 12-month follow up with the teledentistry group having a higher score (p&lt;0.001).</li> </ul>	<ul style="list-style-type: none"> <li>Compared to the gold standard (in-person examiner) the 4 remote examiners had an average of 98% sensitivity, 73% specificity, 80% positive predictive value, and 97% negative predictive value on whether a patient should be referred for dental problem treatment.</li> </ul>	<ul style="list-style-type: none"> <li>There was no significant difference between the intra-examiner and inter-examiner variability in decayed, missing, filled teeth scores (p&lt;0.001).</li> </ul>
<i>Conclusion</i>	<ul style="list-style-type: none"> <li>When screening for early childhood caries in preschool children, teledentistry examinations were comparable to clinical examinations.</li> </ul>	<ul style="list-style-type: none"> <li>Remote dental diagnosis of children based on non-invasive photographs may serve as a valid diagnostic resource.</li> </ul>	<ul style="list-style-type: none"> <li>Screening for early childhood caries in young children is effective via digital images generated in a school setting.</li> </ul>

## RESULTS

- All three of the included studies found that teledensity had similar diagnostic results to traditional, in-person examinations when screening for childhood caries (Table 1).
- Reported benefits of teledentistry:<sup>1, 2, 3</sup>
  - Reduced cost
  - Less labor intensive
  - Potential to identify caries in high-risk children
  - Improved access to all
  - Less time consuming
  - No patient transportation needed
  - Minimal disruption of daily routines
  - Safety



## CONCLUSION

- Phase I review of EBD and the literature suggested that teledentistry provides similar diagnostic value as in-person exams for oral health screenings for childhood caries.
- Pursuit of development of “Best Practices” for a pilot teledentistry project at a dental school is worthwhile given it is a valid alternative to traditional pediatric screenings.
- Teledentistry offers a number of unique benefits and should be explored as one model to engage students in a community oral health projects and preparation for practice.

## REFERENCES

- Amável R, Cruz-Correia R, Frias-Bulhosa J. Remote diagnosis of children dental problems based on non-invasive photographs - a valid proceeding?. Stud Health Technol Inform. 2009;150:458-462.
- Kopycka-Kedzierawski DT, Billings RJ. Comparative effectiveness study to assess two examination modalities used to detect dental caries in preschool urban children. Telemed J E Health. 2013;19(11):834-840. doi:10.1089/tmj.2013.0012
- T S, Anandan V, Apathsakayan R. Use of a Teledentistry-based Program for Screening of Early Childhood Caries in a School Setting. Cureus. 2017;9(7):e1416. Published 2017 Jul 1. doi:10.7759/cureus.1416
- Vargas CM, Ronzio CR. Disparities in early childhood caries. BMC Oral Health. 2006;6 Suppl 1(Suppl 1):S3. Published 2006 Jun 15. doi:10.1186/1472-6831-6-S1-S3
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