Utilizing Intraoral Cameras in Public Health Dentistry: A Pilot Project

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Purpose

This pilot project aims at improving dental care access for pediatric patients at UPMC Children's Hospital of Pittsburgh through the innovative use of intraoral cameras.

Introduction

Dental caries is one of the most common chronic childhood conditions, and there is a large socioeconomic component to the children most prone to caries. By kindergarten, 40% of children have caries (1, 2). Children from low-income and ethnic minority backgrounds suffer higher levels of decay and consequences of acute and chronic mouth pain (3). here is a national shortage of dentists to see these children, especially those on Medicaid, CHIP and the uninsured. While the American Academy of Pediatric Dentistry recommends children be seen for their first dental visit within six months of the eruption of their first tooth or by age one, many patients do not see the dentist until they are in pain. However, these children are currently seen in their medical home prior to the age of three, and integrating a dental exam at these visits can help identify urgent needs in these patients prior to chronic pain problems. By utilizing routine screenings via teledentistry and caries risk assessment, we can meet patients where they are and help identify issues early. The utilization of the intraoral camera within a public health hygiene clinic can have similar access to care benefits, but primarily it will streamline the treatment planning and treatment in children with caries. By better identifying caries at baseline, appropriate recommendations can be made immediately rather than having another evaluation appointment with the dentist.

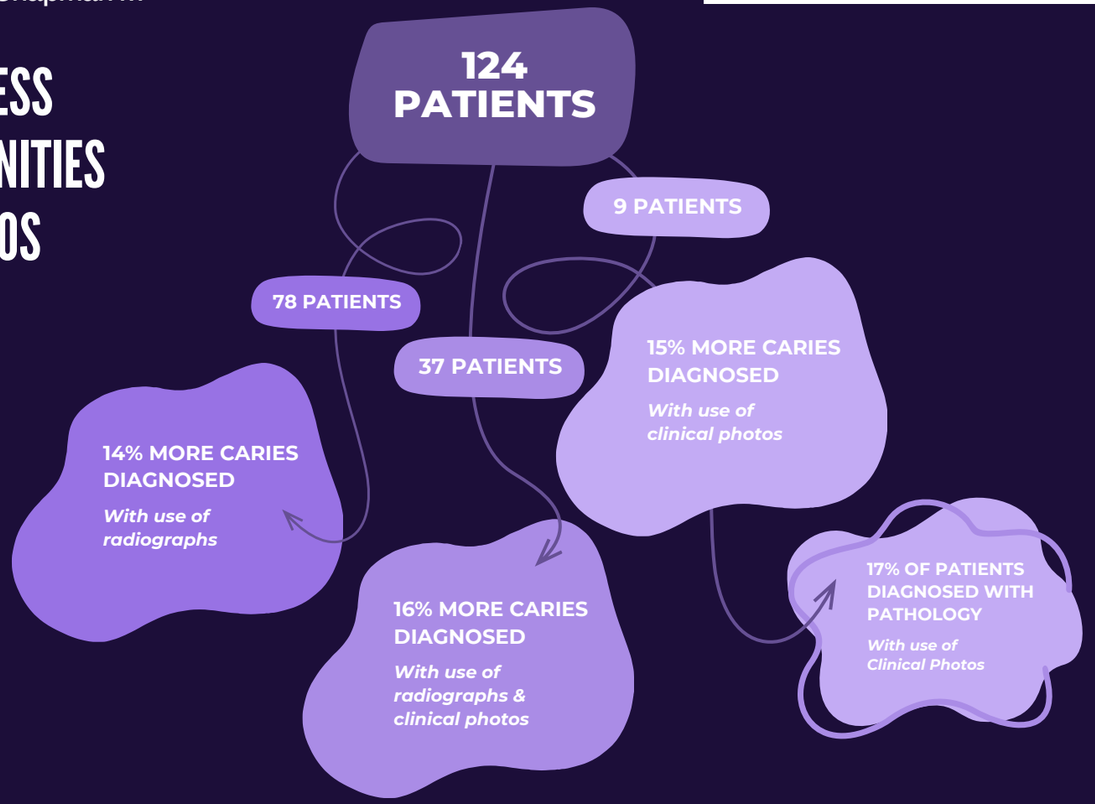
Methodology

The project targets underserved children aged 0–12, addressing barriers caused by limited on-site dental professionals and extended wait times. Training took place with public health hygienists and medical staff to use the cameras for caries detection at two clinics. Charts were reviewed from two sites comparing (1) treatment plans public health hygienists developed in concert with radiographs or, radiographs and intraoral images; (2) Treatment plans simultaneously made by two dentists using these same inputs. (3) The final outcome of treatment which was based on a dentist seeing the patient live. The first two groups were compared to group 3 to see if the aid of intraoral camera photos helped streamline diagnosis and treatment planning for patients.

Results

A total of 124 patients were examined. The use of an intraoral camera for clinical photos resulted in a 15% increase in the detection of dental caries compared to standard diagnostic methods. When both radiographs and clinical photos were utilized, there was a 16% increase in the diagnosis of dental caries compared to diagnosis by a public health hygienist alone. Additionally, the intraoral camera revealed that 17% of patients examined had some form of oral pathology, including dental abscesses, oral ulcers and hypoplastic teeth. These findings suggest that the combination of radiographs and intraoral camera photos significantly enhances diagnostic accuracy, particularly in the identification of both caries and oral pathologies.

EXPAND DENTAL CARE ACCESS FOR UNDERSERVED COMMUNITIES THROUGH INTRAORAL PHOTOS AND STREAMLINING CARE OPTIONS



Discussion

This study shows that using an intraoral camera improves diagnostic accuracy, with a 15% increase in caries detection compared to standard methods. When combined with radiographs, caries diagnosis improved by 16% over evaluations by a public health hygienist. Additionally, the camera identified oral pathologies, such as dental abscesses, in 17% of patients. These results highlight the value of combining radiographs and intraoral photos for comprehensive diagnosis. This approach is scalable, cost-effective, and can enhance care in areas with limited dental resources, supporting efforts to increase access to care.

Conclusion

Success in streamlining care would indicate the project is scalable to other locations, which can leverage existing resources for cost-efficiency, and aligns with broader efforts to integrate oral health into primary medical care. Further, utilizing staff at clinics where dentists are limited can maximize point of care services to patients who most need them and improve comparative advantage. The input costs for purchasing intraoral cameras are certainly outweighed by the benefit to streamlining care.

References

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