SMART-DENT: A System for Monitoring and Referral for Timely Dental Treatment

Ahmed ZU[1], Chakraborty B[1], **Scharf J[1]**, Muenzberg T[2], Gajendra S[1]

[1]Department of Community Dentistry, Eastman Institute for Oral Health,
[2]Office of Research IT, Rochester, NY.

Abstract ID: 2008344

Objectives

The purpose of the SMART-DENT project was to enhance the five-year BUilding Dental Homes for School Children (BUDHS) program, by developing a web-based portal to create a centralized oral health registry known as the BUDHS Project Registry (BPR) for a school-based prevention program. This web-based portal functions as a comprehensive dental referral management tool, facilitating timely referrals to dental homes, ensuring appropriate follow-up care using care coordination. The system also helps in providing resources for oral health education and prevention of oral diseases.

Background

- Dental caries is the most common oral disease among young children (1) and affects 46% of the youth population in the U.S. (2).
- Despite Medicaid and CHIP programs offering dental coverage, utilization rates remain below 45% (3), primarily due to competing priorities and lack of awareness among families (4,5). School-based dental programs address these challenges by improving access to care.
- Patient portals have been successfully used in healthcare (6,7,8). However, they have not yet been used in school dental programs.
- The BUilding Dental Homes for School Children (BUDHS) Program, launched by the Department of Community Dentistry at the EIOH and funded by the New York State Department of Health (2023–2028), targets Tier 1 schools with a high prevalence of low-income and minority populations.
- The SMART-DENT project offers a web-based patient monitoring portal, focusing on preventive dental services and connecting school children to dental homes and other referrals using care coordination.

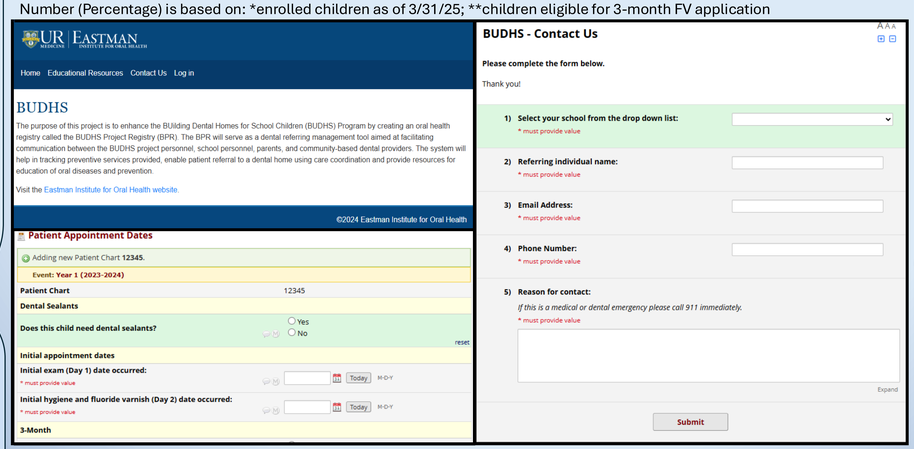
Methodology

- The SMART-DENT project developed a web-based patient portal using REDCap software in collaboration with the University of Rochester's Office of Research Information Technology.
- The portal integrates the BUDHS Program with the BUDHS Project Registry (BPR) and provides communication links between school personnel, parents, and the dental team, along with access to oral health educational resources.
- Key features include appointment tracking, a streamlined referral system for advanced dental care, and automated email reminders for preventive visits.
- Project evaluation involved analyzing data from diagnostic and preventive visits.

Table 1: Data Recorded by SMART-DENT for Year 1 and Year 2

Parameter	Year 1 (n=232)	Year 2* (n=206)	Total (n=438)
Children who received exams	232	206	438
Prophylaxis and fluoride varnish	217 (94%)	183 (89%)	400 (91%)
Dental sealants applied	85 (37%)	79 (38%)	164 (38%)
Patients referred for Orthodontics	18 (7.8%)	17 (8.3%)	35 (8.0%)
Patients referred for OR/Nitrous	40 (17%)	20 (9.7%)	60 (14%)
3-month follow-up for FV**	28 (13%)	59 (63%)	87 (20%)
Referred to Dental Home	118 (51%)	144 (70%)	262 (60%)
Communication Portal Uses	N/A	0	0

Number (Percentage) is based on: *enrolled children as of 3/31/25; **children eligible for 3-month FV application



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Results

- The SMART-DENT project thus far has helped to establish a continuity of dental care for low-income schoolchildren and adolescents in eight schools in Rochester, NY.
- All patient data were entered into the BUDHS Project Registry (BPR).
- Table 1 shows the total number of enrolled children who were examined, received preventive dental care and referred for further treatment in Year 1 and Year 2.
- The portal's automated reminder system improved adherence to preventive care schedules, with an increase from 13% to 63% from Year 1 to Year 2 for the 3-month follow-up for fluoride varnish application.
- The referral system efficiently connected 262 (60%) children to a dental home, 35 (8.0%) children for orthodontic care, and 60 (14%) children to the Operating Room or for treatment with nitrous sedation using care coordination.
- The communication portal was not utilized by parents or school personnel after its introduction in Year 2.

Discussion

- The SMART-DENT project is an innovative and novel web-based portal, developed and implemented using REDCap and is being used for the first time in a school-based program.
- This project demonstrated improved access to and coordination of dental care.
- Overall, 95% of enrolled children received preventive dental services.
- Enhanced appointment tracking and referral information was central to the project's success. Automatic reminders allowed for efficient delivery of care by the dental providers and facilitation of referrals by care coordination.
- A limitation of this study is the underutilization of the communication portal. This could be because the link to the portal was shared via a QR code on the paper-based oral health findings report sent home with kids. It is possible that parents may not have read the report and could have missed the information about contacting the BUDHS team using the QR code.

Conclusion

- The SMART-DENT project successfully enhanced care coordination and access to dental services for children enrolled in the BUDHS Program.
- The automated reminder system improved adherence to preventive visits, while the referral system effectively connected children to community dental providers for further treatment using care coordination.
- These findings highlight the potential of digital health solutions like SMART-DENT to serve as effective tools in school-based dental programs, providing a scalable approach to improve pediatric oral health outcomes.

Funding: American Association of Public Health Dentistry Foundation Small Grant Program