The Oral Health Prevention Program (OHPP) to Reduce Pediatric Oral Health Disparities in Charleston Peninsula Title I Schools

A program and curriculum for improving preventive oral health and reducing dental caries among children ages 5 to 13 attending Charleston Peninsula Title I schools through school-based dental services and education.

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I. MISSION STATEMENT, GOALS, AND OBJECTIVES

Mission Statement

The mission of this program is to improve the oral health outcomes of children aged 5–13 attending Title I schools on the Charleston Peninsula by increasing students' access to preventive dental care, resources, and oral health education. By providing school-based sealant, fluoride, and screening services through partnerships with local dental programs of MUSC and Trident Technical College, the program seeks to reduce the incidence of early childhood caries and minimize the impact of geographic, financial, and socioeconomic barriers to care. This program aims to empower students, families, and schools to prioritize preventive oral health practices to support long-term improvement of oral health equity in Charleston County.

Program Goals

Goal 1: Increase Access to Preventive Dental Care
Goal 2: Enhance Oral Health Knowledge and Practices
Goal 3: Strengthen Partnerships in Community for Lasting Oral Health Equity
Goal 4: Reduce Oral Health Disparities in the Prevalence of Caries

Goals Objectives

Goal 1: Increase Access to Preventive Dental Care for low-income children in Charleston peninsula Title I schools through school-based delivery models.

1.1 - Provide dental screenings, fluoride varnish, and sealants to at least 60% of enrolled students across the three target Title I elementary and middle schools by the end of each program year.

1.2 - By the end of Year 1, increase the number of students receiving preventive dental services by 20% compared to baseline participation rates, measured through pre-program and post-program surveys.

1.3 - By the end of each school year, ensure that 100% of students identified as high-risk receive MUSC referral forms and documented follow-up care coordination, with at least 75% completing a scheduled appointment within 3 months, as tracked through referral logs.

Goal 2: Improve children's and families' knowledge, attitudes, and skills related to oral hygiene and preventive behaviors.

2.1 - Develop and implement oral health education modules of preventative practices for all participating grade levels through all three schools by the end of month six of the program, delivering at least one instructional session per grade level and documenting completion through lesson logs.

2.2 – By the end of the first year of the program, increase students' self-reported daily brushing and flossing behaviors by 15% by the end of the first year, using pre- and post-program surveys to measure adherence.

2.3 - Provide take-home educational materials to at least 90% of students' parents or guardians to reinforce at-home oral health behaviors by the end of the third program month.

Goal 3: Strengthen community partnerships for oral health equity through forming lasting collaborations among Charleston County School District (CCSD), MUSC, and Trident Technical College to support long-term oral health improvement.

3.1 - Create long-term partnership agreements with MUSC College of Dental Medicine and Trident Technical College to provide mobile dental teams and hygiene students for service delivery to local Title 1 schools in need by the end of the second year of the program.

3.2 - Beginning in the first year of the program, host meetings twice yearly with school nurses, community MUSC and Trident partners, and dental program coordinators to evaluate program reach and barriers to care.

3.3 - Develop a sustainability plan by the end of the second program year to secure ongoing funding and necessary resources to continue school-based dental prevention programs.

Goal 4: Lower the incidence and severity of untreated dental caries among students attending participating Title I schools in the Charleston Peninsula.

4.1 - Achieve a 20% decrease in untreated early childhood caries prevalence compared to the initial screenings by the end of year 2.

4.2 - Achieve a 10% increase in the percentage of students with no new dental by the end of year 1.

II. NEEDS ASSESSMENT

BACKGROUND

A.1 Dental caries and tooth decay are the most prevalent chronic diseases in children (NIH, 2022).

Dental caries, commonly known as tooth decay, represents a highly prevalent chronic disease in children (NIH, 2022). Harmful social and biological factors accumulated early in life contribute to the risk of tooth decay in children throughout middle to late childhood (Peres et al., 2005). Untreated dental caries leading to poor long-term oral health significantly compromises overall health in children by inhibiting sleep quality, nutritional intake, behavioral regulation, and daily functioning, leading to downstream educational and behavioral consequences (Drummond et al., 2013; Mouradian et al., 2000). Throughout the world, socioeconomic status (SES), including factors such as family income and parental education status, consistently correlates with higher rates of dental caries, poorer oral-health–related quality of life (OHRQoL), and inadequate preventive oral hygiene behaviors (Almajed et al., 2024; Mouradian et al., 2000). These disparities cause a disproportionate burden among children from socioeconomically disadvantaged backgrounds.

A.2 Socio-economic inequality makes a disproportionately lasting impact on oral health in children through adulthood.

Insurance coverage and healthcare utilization patterns throughout the United States highlight the existing equity gap between insurance prevalence, insurance coverage limits, and dental healthcare utilization (Pouraskari et al., 2024). National analyses demonstrate that children at or near the poverty line have substantially lower odds of receiving preventive dental care compared to their peers with higher socio-economic status, even following adjustment for demographic variables including race, ethnicity, age, and sex (Watson et al., 2001). Survey-based studies identify structural barriers involving insurance for low-income and Medicaid-enrolled populations, including reduced sealant usage, an insufficient number of participating dentists, and reimbursement mechanisms that disincentivize preventive care (Dasanayake et al., 2001). While one National Health and Nutrition Examination Survey (NHANES) analysis indicated similar caries odds by insurance category after controlling for SES, low income itself remains a

robust predictor of untreated disease (Duffy et al., 2018). Recent studies examining dental sealants as a targeted form of preventative dental care that is a highly effective treatment to prevent caries reveal gaps in access for children with non-private insurance. The study shows that children with insurance coverage ranging from public insurance only to fully uninsured children were all less likely to have received preventative treatments, particularly sealants, than peers with only private insurance. These disparities were more significant in certain demographics, including Black children, children of families below the 200% poverty-level, and children facing socioeconomic or language barriers, indicating inequities in proper preventative dental care exist even in the presence of some insurance (Bahanan, 2024).

A.3 Impact of Poor Oral Health on Childhood Development and Life-long Consequences.

Early childhood caries (ECC) and untreated dental decay impair proper daily functioning, such as core developmental tasks and school participation, and childhood development. Dental pain and infection are often overlooked in young children, but they commonly disturb sleep, reduce appetite, and trigger behavior and attention problems in children that impact developmental behaviors and performance in school (Drummond et al., 2013). Studies examining the influence of dental care on children's well-being highlight the correlation between ECC in young children and worsened oral health in adolescence and into adulthood, including higher risks of caries, periodontal disease, malocclusion, and the development and worsening of dental anxiety due to long-term avoidance (Drummond et al., 2013).

Secondary health outcomes	Early treatment (Test)n=42	Regular treatment (Controls)n=44	P
Dental pain			
Improved	7	11	<0.001
No change	35	22	
Worsen	0	11	
Dental Sepsis			
Improved	9	9	0.005
No change	33	26	
Worsen	0	9	
Satisfaction			
Improved	14	5	0.01
No change	27	32	
Worsen	1	7	
Child's appetite			
Improved	20	10	0.01
No change	19	22	
Worsen	3	12	

Table 1: Changes in secondary health outcomes between baseline and follow-up stages, by early vs. regular treatment groups

Poor oral health and dental disease also affect growth and nutrition in children. Studies have found that children with severe dental caries often weigh less than their peers due to chronic inflammation affecting metabolic pathways, emphasizing the need to treat dental caries in pre-school children to increase growth rates and improve OHRQoL in children long-term (Sheiham, 2006). As shown in Table 1, a randomized controlled trial found that treating severe dental caries in school-age children improved dental pain, sepsis, appetite, and anthropometric measures, as indicated by "satisfaction" with teeth and smile, reinforcing the link between oral care and overall health (Alkarimi et al., 2012). Population-level policy reviews also connect poor oral health to negative impacts on schooling and costly downstream dental care, with the burden disproportionately concentrated among low-income and minority children (Mouradian et al., 2000). These impacts on schooling occur as poor oral health is associated with more school absences, lower grades, and reduced academic achievement from pain-related absences and inhibited ability to focus, highlighting education costs that concentrate in disadvantaged groups (Jackson et al., 2011). Longitudinal studies show that oral-health disadvantages in early childhood cause impacts that persist into adolescence and adulthood, widening health and OHRQoL gaps (Almajed et al., 2024; Peres et al., 2005).

A.4 Existing income disparities impact the Charleston peninsula due to a large influx of tourism and high-income in-migration.

Since the 2020 COVID-19 pandemic, the Charleston peninsula has attracted a large influx of higher-income residents and is experiencing rapid population growth (Portal, 2025). A combination of large institutions, rapid in-migration of residents, and a tourism surge have

significantly changed the income distribution throughout the Charleston area. These large institutions include the Medical University of South Carolina (MUSC), which employs more than 17,000 workers with 3,300 students, and the College of Charleston, which supports a large professional workforce and student economy downtown, concentrating higher-wage jobs on the peninsula (CHSBusiness, 2020; Development, 2024). Alongside a growing increase in high-wage jobs, tourism also surged in the Charleston peninsula, driven by higher per-visitor spending since the 2020 pandemic (Moore, 2025). The significant in-migration of approximately 42 new residents per day, alongside an influx of high-income populations, is causing gentrification within downtown neighborhoods and increasing demand for affordable housing and services in the urban core of the Charleston peninsula for the original residents (Development, 2025). These shifts in residential populations have displaced many long-standing low-income communities from the peninsula, concentrating the remaining low-income communities in certain neighborhoods on the peninsula (Blakeney, 2023). Many low-income families have children who are students served by Title 1 schools, which highlights a need to place preventative services directly on the schools' campuses, where dental care is accessible, to best close geographic and eligibility gaps.

A.5 Gaps in Current Resources Available to Children Attending Title 1 Schools in the Charleston Peninsula

Though there are several supportive dental treatment options throughout Charleston for vulnerable populations, most are unevenly distributed and often treatment-oriented rather than preventive. Several services are located off-peninsula or serve restricted populations, such as East Cooper Community Outreach and North Charleston Dental Outreach. East Cooper Community Outreach (ECCO) runs dental clinics that focus on extractions and is limited to uninsured residents living east of the Cooper River, excluding all children of families living on the peninsula, which is located on the west side of the Cooper River, including those who are underinsured and otherwise eligible (ECCO, 2025). North Charleston Dental Outreach does offer several treatment options involving preventative care, however, the hours are limited to weekdays during working hours, and the location is in North Charleston, which inhibits many children in the peninsula with working parents from receiving the care they need, despite their financial eligibility (NCDO, 2025). While Fetter Health Care Network provides fixed-site and mobile dental services and seasonal school sites, availability is dispersed across locations throughout rural areas surrounding Charleston County, making consistent preventive care difficult for students to access in the peninsula (FetterHealthCareNetwork, 2025).

These access barriers in Charleston represent broader national patterns of oral health disparities, in which use of preventive treatments remains low among low-income children, with a focus on treatment of more severe complications once they develop. Medicaid analyses in Alabama highlighted low sealant usage among Medicaid patients and geographic disparities due to regions with no Medicaid-participating dentists (Dasanayake et al., 2001). National surveys show many low-income children miss routine preventive visits and are less likely to receive preventive care such as cleanings, fluoride, and sealants intended to target primary and early secondary prevention (Watson et al., 2001). A 2024 study found that children with public-only, a combination of public/private, or no insurance were less likely than their peers with private insurance to receive sealants. The largest gaps between demographics found were among Black children, families below 200% of the federal poverty level, and those facing language barriers (Bahanan, 2024). Several Title I schools in the Charleston peninsula serve high-need populations children in low-income families, emphasizing the need to deliver preventive oral health services

on-site where children in need regularly attend school and are accessible to offer early prevention.

A.6 School-Based Prevention programs have been proven to be effective in reducing caries risk in school-age populations.

School-based sealant programs (SBSPs) are one of the most effective and accessible strategies for decreasing caries prevalence in high-risk adolescent populations (Johnson et al., 2017). A 2017 policy modeling study conducted in Georgia demonstrated that SBSPs reached a greater number of children at a lower cost than strategies relying solely on provider fee increases. Additionally, the program enabled dental hygienists to practice under general supervision, instead of costly direct supervision, which reduced program costs by over 50% while expanding reach to the target population (Johnson et al., 2017). Beyond direct clinical prevention, school-based educational oral health programs can result in sustained long-term benefits in perceived oral health and daily functioning extending beyond adolescence and into young adulthood (Alsumait et al., 2015). Reviews on the studies of management of Early Childhood Caries (ECC) further highlight the efficacy of minimally invasive preventative treatments such as sealants, resin infiltration, and silver diamine fluoride (SDF) that preserve tooth structure and help prevent the development of future complications, making these methods highly suitable for school-based delivery programs (Drummond et al., 2013).

A.7 Overview of Proposed Intervention Program Rationale

The concentrated group of Title I schools within the Charleston peninsula provides an optimal opportunity for a school-based oral health prevention and navigation program for low-income, underserved students on the Charleston peninsula (Education, 2024). This intervention would target students aged 5 to 13 of any insurance status attending Sanders-Clyde Elementary School, Julian Mitchell Elementary School, and Simmons-Pinckney Middle School Title I Schools in the Charleston peninsula to involve on-site screenings, fluoride varnish applications, and sealant placement for underserved students at risk for caries and poor oral health development. The program will involve Charleston County School District (CCSD) nurses, MUSC dental school students, and Trident Technical College students. Consent processes and oral health education would be integrated into existing school documentation to allow for parent and guardian consent without requiring their physical presence. The literature suggests that a focus on a specific insurance coverage category may overlook certain high-risk children, so the program will be open to both uninsured and underinsured students (Duffy et al., 2018). The program will integrate both preventative treatments, referrals to MUSC partners for identified oral health complications, and educational programs to equip students with the necessary knowledge to maintain proper oral health long term. Services will be delivered by dental hygiene students of Trident Technical College and dental students of Medical University of South Carolina.

III. LOGIC MODEL

Inputs	Activities	Outputs	Short-Term Outcomes	Long-Term Outcomes
MUSC Dental School and Trident Tech hygiene students	School-based dental health programs include fluoride treatments, sealant applications, and screenings to protect students' teeth from cavities and decay while identifying potential oral health issues early.	Dental school and hygiene students will screen and treat the target population of aged 5-13 students.	The program successfully increased oral-health knowledge among the Title I schools' students, empowering them with the tools and understanding necessary to maintain healthy dental habits from a young age.	Enhanced oral hygiene practices, including better brushing and flossing habits, have contributed to a decrease in the incidence of caries in Charleston Title I schools.
Charleston County School District (CCSD) nurses	Oral-health education modules are created for each grade level to ensure education tailored for the comprehension level of each students' ages.	Number of educational sessions delivered by CCSD nurses and responses of students' knowledge evaluations.	Program successfully improved students' perceived susceptibility and understanding of the severity of poor oral health on lifelong wellbeing.	Students' peformed increased self-efficacy and engagement in preventive care with sustained oral-health equity across low-income school communities.
Title I school facilities with CCSD partners	Program educators developed take-home education packets for parents, guardians, and families to improve oral health knowledge and perceptions.	Measured number of educational materials distributed to students and their families.	Parents, guardians, and families display increase awareness of preventive dental behaviors with improved family engagement with dental visits and at-home routine hygiene.	Title I schools form strengthened community-academic partnerships to ensure long-term improvement of oral health in target population students.
Program funding	Program will implement monthly meetings with CCSD community partnership organizations with the participating MUSC and Trident students.	Measured number of partnership and evaluation meetings held between CCSD partners and participating MUSC and Trident students.	Program establishes a screening system for high-risk children in target population to identify and diagnose problems and form short-term treatment plans.	Program establishes ongoing evaluation and sustainability planning to ensure a long-term reduction of oral-health disparities across Charleston County Title I Schools.

Table 2: Logic Model explaining the inputs, activities, outputs, and expected short-term and long-term outcomes of the Oral Health Prevention Program (OHPP) for the targeted CCSD Title I Schools in the Charleston Peninsula.

IV. PROGRAM THEORY

The Health Belief Model (HBM) offers a valuable framework for designing oral health interventions for this program in Charleston Peninsula Title I schools, emphasizing the psychological factors that influence preventive oral health behaviors. The HBM was originally developed by social psychologist Irwin M. Rosenstock in 1974, and it is one of the most widely used theories for explaining and predicting health behaviors (Conner, 2019).

The HBM theory of behavior change specifically predicts that individuals are more likely to engage in preventive health behaviors when they perceive themselves to be susceptible to a condition, believe the condition has serious consequences, recognize the benefits of taking the actions, and recognize the minimal barriers to engaging in the target behaviors. These perceptions of health behaviors are further influenced by cues to action, such as reminders or educational materials, and the individual's self-efficacy, or confidence in their ability to perform the behavior (Conner, 2019). Past studies have proven that the HBM is effective in oral health education when combined with community-based strategies and school-based interventions (Hollister, 2004). The HBM constructs align well with the challenges faced by underserved populations, making it a suitable model for addressing disparities in dental care access and outcomes.

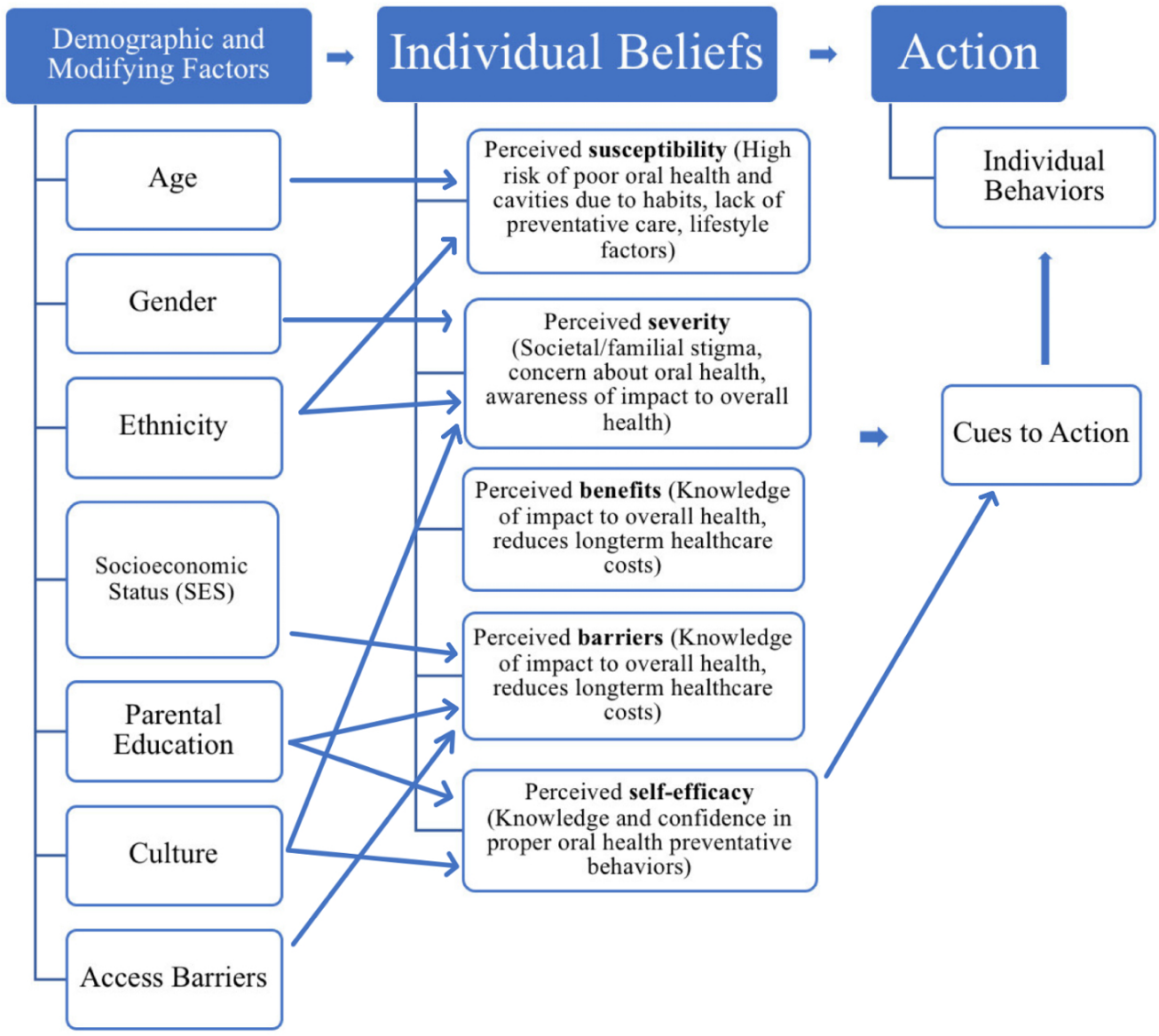
The HBM can be beneficial in oral health promotion among children and families in Charleston Peninsula Title I schools by providing a valuable lens for creating interventions and tailoring them to specific target populations. For example, perceived susceptibility can be addressed by educating students and families about the high risk of cavities in children who lack fluoride treatments or dental sealants. Perceived severity can be emphasized by linking poor oral health to broader overall health consequences, such as impaired school performance, disrupted sleep, and poor nutrition. Perceived benefits can be addressed *by* demonstrating how regular brushing, flossing, and dental visits contribute to improved oral health and overall well-being.

To overcome common perceived barriers, such as fear of dental procedures or lack of access to care, schools can offer dental services and culturally sensitive education in the students' school, so they do not need to coordinate transportation or timing. Cues to action can be addressed through creating and implementing posters, teacher-led discussions, and take-home materials in the target Title I schools to serve as consistent reminders to reinforce healthy hygiene and preventative habits. Self-efficacy can be built through hands-on activities, such as practicing brushing techniques with dental models, to educate and empower the young students to take ownership of their oral hygiene routines, to set them up for long-term success in oral health.

Key constructs	Application to program
Perceived Susceptibility	Education sessions emphasize that any child without sealants or fluoride is at risk for cavities
Perceived Severity	Education sessions educate about the connection of oral health to overall health, specifically school performance, sleep, and nutrition.
Perceived Benefits	Students learn how preventive hygiene actions improve oral health, overall health, and confidence.
Perceived Barriers	Barriers to oral health such as dental anxiety and lack of knowledge or access are reduced through in-school services.
Cues to Action	Students receive visual and social cues to oral health preventative behaviors such as posters and regulated teacher reminders.
Self-Efficacy	Students practice proper behaviors with models to build confidence to properly maintain oral hygiene.

Table 3: Key Constructs of the Health Belief Model and their application to the Oral Health Prevention Program (OHPP) to guide student preventative oral health behaviors.

Figure 1: Health Belief Model Figure



V. PROGRAM DESCRIPTION

The goal of this program is to improve the oral health outcomes of children aged 5-13 attending Title I schools on the Charleston Peninsula by increasing access to preventive dental services and oral health education. The CCSD Title I Oral Health Prevention Program (OHPP) will operate over two years across three Title I elementary schools within the Charleston Peninsula, providing preventive dental screenings, fluoride varnish, and sealant placement, alongside oral health education. By increasing access to preventive dental services and oral health education, the OHPP seeks to reduce disparities in dental care, particularly among uninsured or underinsured students aged 5-13. The program will operate across three Title I

elementary schools, Sanders-Clyde Elementary School, Julian Mitchell Elementary School, and Simmons-Pinckney Middle School, delivering in-person, school-based services that combine oral health education with individual clinical screenings, treatment, and referrals.

Each school will host one full-day clinic per semester, supplemented by three follow-up education visits designed to reinforce oral hygiene habits and promote long-term behavior change in the targeted student population's own schools. Services will include dental screenings, fluoride varnish applications, and sealant placement, all provided by MUSC and Trident students. Children will also receive educational materials and take-home packets to extend learning beyond the classroom to their home environment to further educate their parents and guardians. For students with diagnosed complications requiring advanced treatment, the program will coordinate referrals to MUSC clinics.

The OHPP is developed using the Health Belief Model, with education modules and learning activities designed to increase perceived susceptibility and severity of oral health issues. Visual learning tools will emphasize the benefits of preventive care, while on-site clinics help minimize logistical barriers. Reminders serve as cues to action, and hands-on practice sessions build self-efficacy to empower and enable children to take ownership of their oral health.

Phase & Focus	Sessions	Learning Objectives	Activities	HBM Constructs	Materials
Phase 1: Awareness and Risk Recognition	Why Teeth Matter: Interactive Discussion and Visuals	Identify causes of dental caries and discuss their preventability; recognize the relationship between oral health and overall well-being	Interactive group discussion using tooth models and visuals; visual demonstration showing stages of tooth decay	Perceived Susceptibility & Severity	Tooth model, cavity progression visuals, PowerPoint slides
Phase 2: Skill Building and Prevention	Brushing/ flossing demonstration and practice	Demonstrate correct brushing and flossing techniques; develop confidence in performing oral hygiene independently	Hands on brushing and flossing demonstration using dental models; peer practice and feedback sessions; group reflection on daily hygiene habits.	Self-efficacy	Toothbrush, typodont, floss, colored tissue paper to represent food stuck in teeth
Phase 3: Education	Fluoride/ sealant protection for poor oral health prevention	Describe the purpose and benefits of fluoride varnish and sealant treatments;	Short presentation on fluoride and sealant function; interactive experiment:	Perceived benefits	Posters, fluoride samples, demonstration materials (eggs, plastic

		identify how fluoride strengthens enamel and prevents cavities	"Fluoride Shield" activity using eggshells, plastic wrap, and fluoride solution (staining to show impact of decay); discussion on importance of available in-school fluoride/sealant clinics.		wrap to represent fluoride application, water with food coloring)
Phase 3: Overcoming Challenges and Reinforcement	Overcoming barriers	Identify common barriers to oral hygiene (fear, cost, forgetfulness); generate practical strategies to overcome the challenges	Story-based scenarios on dental fears and access barriers; guided discussion on how schools and families can help.	Perceived barriers	Story cards/speech papers
Phase 4: Sustaining Healthy Habits	Healthy oral health habits	Set personal oral-health goals and make a "healthy smile" plan; identify cues that will remind students to practice proper daily oral hygiene	Goal-setting activity: "My Healthy Smile Plan."; reminder poster-making; teacher follow-up reminders incorporated into classroom routines	Cues to action & self-efficacy	Posters, stickers, pledge sheets, reminder cards

Table 4: Proposed OHPP components explaining each phase's focus, content, learning objectives, activities, HBM constructs, and required materials for implementation in CCSD Title I schools.

VI. PROGRAM IMPLEMENTATION

The implementation plan of the OHPP for the CCSD Title I Schools will occur in three key phases over two years, including a pre-implementation phase, implementation phase, and the evaluation and follow-up phase.

1. Pre-Implementation (months 1-3)
    - Establish foundational partnerships between Charleston County School District (CCSD) Title I Schools, the Medical University of South Carolina (MUSC) School of Dentistry, and Trident Technical College Dental Hygiene School to coordinate roles, resources, and responsibilities.

- Formalize plans for collaboration among the Title I CCSD elementary schools, dental providers, and other participating community partners.
- Integrate parental consent forms into school registration packets to eliminate participation barriers related to transportation and scheduling.
- Recruit and train dental and hygiene students from MUSC and Trident to deliver educational and preventive services in Title I schools.
- Conduct baseline oral-health surveys to assess students' knowledge, health behaviors, and access to preventive dental care, to provide data for later evaluation toward the end of the program.

2. Implementation (months 4-18):
   - Operate school-based dental clinics across three Charleston Peninsula Title I schools to provide screenings, fluoride varnish, and sealants.
   - Deliver five oral-health education sessions per grade based on the Health Belief Model, emphasizing susceptibility, benefits, and self-efficacy.
   - Record participation and treatment data to track program reach and outcomes in target population students.
   - Hold program participants' meetings at the end of each semester to evaluate progress and address challenges and barriers identified.
   - Communicate with teachers and staff to reinforce oral health messages and daily cues to action.
3. Evaluation and follow-up (months 18-24):
   - Re-administer oral health surveys to measure post-program improvements in knowledge, behaviors, and attitudes in students and parents or guardians.
   - Compare caries incidence and survey-response data to baseline data from initial surveys to evaluate program impact on clinical outcomes.
   - Analyze data and compile a comprehensive evaluation report summarizing quantitative and qualitative outcomes, including recommendations for sustainability.
   - Develop sustainability strategies for long-term oral health improvement in future populations, including integration into annual school health programming and continued partnerships with the local dental institutions.

VII. EVALUATION PLAN

This proposed evaluation plan is designed to assess the effectiveness of the Oral Health Prevention Program (OHPP) to be implemented in CCSD Title I schools in the Charleston peninsula. This plan utilizes the CDC's Framework for Program Evaluation in Public Health with the Health Belief Model (HBM), which focuses on how individuals' perceived susceptibility, severity, benefits, barriers, and self-efficacy influence the performance of preventative health behaviors. Through stages of formative, process, and summative evaluation, this evaluation plan will measure the performance and outcomes of the OHPP (CDC, 2011).

The formative evaluation will determine the feasibility and fit of the program's educational materials and procedures before full implementation into the target elementary and middle schools. Pilot testing will be conducted during the first three months of the OHPP at Sanders-Clyde Elementary School, Julian Mitchell Elementary School, and Simmons-Pinckney Middle School, and focus groups with students, parents, and teachers will gather feedback on the clarity and relevance of educational materials. Surveys will also be conducted at the beginning of the study to assess students' oral health knowledge, attitudes, and behaviors to establish a

baseline for comparison. Feedback from MUSC students, Trident students, and CCSD school nurses and faculty will also be collected to help refine the program's content and logistics.

The process evaluation will assess the quality and consistency of the OHPPP throughout its implementation. From months four through eighteen, attendance logs will track student participation in education sessions and dental screenings. Observation checklists completed by MUSC and Trident students will monitor adherence to the curriculum, while post-program surveys will measure efficacy and engagement. Timesheets and meeting notes completed by program staff will further document the exact time, resources used, and logistical challenges to be improved for long-term solutions. Descriptive analysis of these data will highlight program reach, strengths, and areas for improvement.

The summative evaluation portion of the evaluation plan will measure the overall impact of the OHPP after two years. Surveys from the beginning and end of the program will be used to compare changes in students' oral health knowledge and oral hygiene behaviors. Teacher observations throughout the program and parent surveys at the end of the program will provide insight into at-home and classroom behavior changes as a result of the OHPP. Clinical screenings will track sealant coverage and untreated caries rates, and attendance records will be analyzed to evaluate reductions in oral health-related absences. Quantitative data, such as frequency of daily brushing and flossing and number of students with decreased untreated caries prevalence, will be analyzed using paired t-tests and chi-square comparisons to determine significance, and qualitative responses, such as student and parent feedback, will be analyzed for common themes that reflect participant experiences and perceived benefits to target in future long-term resources.

This evaluation also utilizes the Health Belief Model to guide how the measures and analyses are tailored to the target population. Perceived susceptibility and severity will be evaluated through surveys on poor oral health and dental disease awareness and risk perception. Perceived benefits and barriers will be measured through parent and teacher feedback on accessibility and impact of the OHPP. Self-efficacy and cues to action will be assessed through student engagement and reported at-home hygiene behaviors. Collectively, these measures will demonstrate how behavioral factors influence program effectiveness. By integrating both qualitative and quantitative methods to evaluate the program, this evaluation plan provides a comprehensive assessment of the impact of the OHPP to improve our understanding of how school-based preventive efforts can promote oral health equity and improve long-term health outcomes for children in Charleston Peninsula Title I schools.

TABLE 4: Evaluation Data

Indicators/Variables	Source	Collection Overview		
		Staff	Time Period	Methods
Formative Evaluation				
Relevance and clarity of oral health education materials (perceived susceptibility, severity)	Education materials and pilot surveys	Project coordinator, MUSC & Trident faculty	Months 1 to 3 (Pre-implementation)	Focus groups and feedback surveys analyzed qualitatively

Baseline oral health knowledge, attitudes, and behaviors	Pre-program student survey	Data analyst, CCSD nurses	Month 3	Quantitative descriptive analysis to establish guidelines and benchmarks
Parent and teacher perceptions of feasibility and potential fit in culture of school/area	Interviews and community advisory feedback	Coordinator and evaluation team	Months 2 and 3	Coded themes using CDC guidelines
Process Evaluation				
Student attendance at education sessions and screenings	Attendance sheets	Program administrative staff	Months 4 through 18	Attendance at sessions and attendance logs
Adherence of lesson delivery to protocol	Observation checklist	MUSC and Trident faculty	School visits each semester	Adherence to guidelines checklist and report attendance scoring
Participant satisfaction and engagement	Post-session survey	Project administrator	End of each phase/year	Likert-scale and open-ended survey responses
Staff time and resource allocation	Staff timesheets and meeting logs	All staff	Months 0 through 24	Time tracking using standardized timesheets/logs
Outcome Evaluation				
Change in students' oral health knowledge (perceived benefits)	Pre/post survey	Coordinator and data analyst	Months 18 through 24	Comparison of pre- and post-program survey responses
Change in self-efficacy and preventive behaviors	Pre/post questionnaire, teacher observation checklist	Coordinator and teachers	Months 18 through 24	Survey analysis and teacher ratings
Change in sealant coverage and untreated caries	Clinical dental screenings	MUSC and Trident student clinicians	Months 0 through 24	Review of student dental charts and comparison of changes in proportions over time
Improved parent/guardian attitudes toward preventive care	Post-program surveys	Evaluation staff	Month 24	Analysis of common themes from survey responses

Reduction in oral health related school absences	School attendance reports	CCSD administrative staff/ teachers	Months 12-24	Comparison of pre/post absence rates using school attendance records

Table 5: Evaluation data overview summarizing the indicators, data sources, collection procedures, staff responsibilities, time periods, and methods used across formative, process, and outcome evaluation components of the OHPP.

VIII. MARKETING PLAN

Inclusion and Exclusion Criteria

The primary target population includes all students ages 5 through 13 enrolled at Sanders-Clyde Elementary, Julian Mitchell Elementary, and Simmons-Pinckney Middle Schools. Students are eligible to participate in dental screenings, fluoride varnish, sealant application, and oral health education if they are currently enrolled at one of the three Title I CCSD schools and a parent or legal guardian provides written consent from the signed permission slip, with agreement also obtained directly from students. Children of any insurance status, ranging from uninsured, underinsured, Medicaid, CHIP, to private insurance, may participate in the OHPP. Priority outreach of the program is focused on families below 200% of the federal poverty level and students whose surveys report limited access to routine dental care. Students will be excluded from on-site clinical procedures if a parent or guardian declines or does not return the required consent forms, if the child presents with medical conditions that make school-based care unsafe without prior clearance (such as complex cardiac conditions requiring premedication), or if the child is acutely ill or absent on the day of the clinic. These students may still receive educational materials and, when appropriate, referrals to MUSC clinics for individualized follow-up.

Reaching the Target Population

Because the OHPP is delivered within schools, marketing will leverage existing communication systems that families already use and trust. Colorful, easy-to-read flyers and consent forms promoting “Healthy Smile Day” will be sent home in students’ folders at the beginning of each semester and again three to four weeks before each clinic day. These materials will use simple and understandable language of a fifth-grade reading level, rather than scientific language, with options for translation into Spanish and other languages as needed to reduce any literacy and language barriers applicable to the students’ families. School communication tools such as the school websites, emails, and advertisements will be used to promote the OHPP to emphasize that the services are free, provided at school during the regular day, and available regardless of insurance status. Teachers and school nurses will also reinforce these messages by distributing reminder cards one month before the program begins, briefly discussing upcoming clinics during announcements, and encouraging families to return consent forms until a 100% response rate has been met. School nurses will also help identify students with a history of or ongoing dental pain and recorded absences related to oral health, and they will specifically reach out to those families.

The OHPP will further aim to reach the target population by extending beyond the schools’ buildings to nearby community and faith-based settings. Program staff will share information at every parent-teacher conference, yearly open houses, and Parent-Teacher Organization meetings to reach the students’ families. The Project Director, Harry Styles, will

also collaborate with local churches and community centers, such as the Girls and Boys Club and YMCA, near the schools to distribute flyers to further outreach to the targeted population. Within each school, posters will also be put on bulletin boards throughout the school to be displayed in the hallways, cafeterias, and nurse offices to further target all eligible students. Marketing funds in the budget will be allocated to specifically support the designing and printing of these "Healthy Smile Day" posters and reminder cards that reinforce the aims of the program and clinic dates in the schools.

Retaining the Target Population

The Program Director will also create retention strategies that will focus on educating students and families to continue preventive behaviors at home beyond the program dates. Dental clinics will be scheduled once per semester at each school, using consistent "Healthy Smile Day" branding so that students and families recognize the OHPP as a recurring, school-wide service occurring for four semesters over two years, rather than a one-time event. Families will receive at least two reminders of the OHPP's "Healthy Smile Day" each semester, one month and one week before clinic events, through printed flyers and messages through the schools' websites and other online communication platforms, and teachers will regularly remind students in class to bring back consent forms. After participating in the clinic, students will receive take-home oral hygiene supply kits with toothbrushes, toothpaste, floss, and a simple "My Healthy Smile Plan" sheet reinforcing at-home hygiene behaviors in a simple and concise explanation. These items function both as incentives to participate in the clinic and as cues to action in the home environment, with the physical supplies to serve as daily reminders of proper oral health behaviors. Parents and guardians will be asked to complete brief feedback surveys, available online or in paper formats, and participation in these surveys will be incentivized through entries into drawings for oral hygiene supply baskets, funded through the marketing portion of the budget. For students who need additional treatment beyond school-based services, the Project Coordinator will contact families with appointment details, transportation option information, and reminder calls or texts for coordinating appointments at the MUSC Dental Clinic, to encourage continued engagement with both the program and referral sites for necessary follow-up treatments.

Special Considerations

The OHPP will follow all legal and ethical requirements, including HIPAA laws for the protection of the students' health information. Written parental consent and child compliance will also be required for all clinical services, and participation forms will clearly communicate the program's procedures, benefits, risks, and need for voluntary participation. Dental screenings and treatments will occur in private or semi-private areas such as the nurse's office or a designated classroom to ensure confidentiality of student health information. All clinical services conducted by MUSC and Trident students will be supervised by licensed MUSC and Trident Technical College faculty and will follow the proper infection control, PPE standards, and emergency procedures for medical treatments.

To reduce stigma and improve accessibility of the dental screenings, the program will be presented as a routine school health service, similar to more common vision or hearing screenings already implemented into the students' curriculum, rather than one targeted only to "high-risk" children. Oral health education sessions will be presented to entire classrooms with

universal teachings to emphasize that free dental check-ups are available and encouraged to all students. Potential organizational barriers, such as school nurse or teacher workloads, scheduling conflicts, and limited space for clinics to be set up, will be addressed by the Program Coordinator through early planning meetings with principals and school nurses and by scheduling clinics on low-disruption days.

IX. BUDGET AND RESOURCES

Personnel

Project Director: 1 calendar months (10% effort) in Years 1-2

The Project Director, Harry Styles, will serve as the primary lead for the Charleston Peninsula Title I Oral Health Prevention Program (OHPP). This individual will be a licensed dentist or public health professional affiliated with the Medical University of South Carolina (MUSC) School of Dentistry, with demonstrated experience in school-based dental public health initiatives and preventive care programs. The Project Director will oversee all aspects of program planning, partnership coordination, and evaluation to ensure successful implementation across participating Charleston County School District (CCSD) Title I schools.

Harry Styles, the project director, will carry out the following duties on the proposed project:

- Year 1: The Project Director will coordinate with MUSC, Trident Technical College, and CCSD leadership to formalize program agreements, lead orientation for dental and hygiene students, and oversee the setup of school-based preventive clinics. They will supervise training on fluoride varnish and sealant application protocols, establish data collection procedures, and lead monthly implementation meetings with the team. The Director will also ensure that parental consent and IRB approvals are obtained prior to the first semester of operations.
- Year 2: The Project Director will continue overseeing program activities, monitor quality assurance and data integrity, and manage evaluation efforts. They will liaise with MUSC and Trident partners to refine workflow efficiency, ensure sustainability planning with CCSD health staff, and lead the final data review and reporting process, summarizing outcomes and recommendations for future scaling.

Project Coordinator: 3 calendar months (25% effort) in Years 1-2

The Project Coordinator, Niall Horan, will be responsible for managing daily operations of the Oral Health Prevention Program (OHPP), coordinating communication between MUSC, Trident, and CCSD schools. The coordinator will organize scheduling for mobile dental units, track clinic data, maintain program records, and provide logistical support to participating students and faculty.

Niall Horan, the project coordinator, will carry out the following duties on the proposed project:

- Year 1: The Coordinator will manage participant consent forms, create and maintain clinic and education schedules, and ensure timely delivery of supplies and data collection materials. They will oversee the creation of educational and take-home packets, provide technical support during school visits, and hold weekly check-ins with program staff and student volunteers.
- Year 2: The Coordinator will maintain oversight of clinic operations, manage all logistics for continuing school visits, assist in evaluation data entry, and prepare quarterly progress summaries. They will also coordinate communications for sustainability planning meetings between MUSC, Trident, and CCSD.

Clinical Supervisor: 2.4 calendar months (20% effort) in Years 1-2

The Clinical Supervisor, Louis Tomlinson, will be a licensed dental hygienist affiliated with Trident Technical College Dental Hygiene Program to supervise the Oral Health Prevention Program (OHPP). He will oversee student hygienists performing fluoride varnish and sealant applications, provide quality control, and ensure adherence to infection control and patient safety standards.

Louis Tomlinson, the Clinical Supervisor, will carry out the following duties on the proposed project:

- Year 1: The Clinical Supervisor will train dental hygiene students in patient management, sealant application, and varnish protocols specific to pediatric populations in school settings. They will supervise in-school clinical days, provide feedback on student performance, and review treatment records.
- Year 2: The Supervisor will continue oversight of clinical delivery and safety, mentor new student hygienists, evaluate the quality of preventive services, and participate in assessment of outcomes related to cavity prevention and treatment referrals.

Oral Health Educator: 2.4 calendar months (20% effort) in Years 1-2

The Oral Health Educator, Zayne Malik, will lead the development and delivery of school-based oral health education modules aligned with the Health Belief Model (HBM) for the Oral Health Prevention Program (OHPP). He will facilitate classroom sessions, create culturally relevant visuals, and lead hands-on hygiene demonstrations to increase self-efficacy among children.

Zayne Malik, the Oral Health Educator, will carry out the following duties on the proposed project:

- Year 1: The Educator will design and implement lesson plans addressing perceived susceptibility, severity, and benefits of preventive oral hygiene. They will lead small group activities and poster-making sessions to reinforce cues to action. They will collaborate with teachers to integrate oral health messaging into classroom routines.
- Year 2: The Educator will refine lesson plans based on Year 1 evaluations, introduce peer-learning projects, and assist in creating sustainability resources for teacher-led continuation of the oral health education modules.

Data Analyst/Evaluator: 1.2 calendar months (10% effort) in Years 1-2

The Data Analyst and Evaluator, Liam Payne, will manage all quantitative and qualitative data collection for the Oral Health Prevention Program (OHPP). They will design pre- and post-intervention surveys for students and families, manage clinical and behavioral datasets, and conduct analyses to evaluate impact.

Liam Payne, the Data Analyst and Evaluator, will carry out the following duties on the proposed project:

- Year 1: The Analyst will develop baseline assessment instruments, coordinate with CCSD staff to collect student data, and ensure HIPAA and FERPA compliance. They will begin compiling descriptive statistics on participation, clinic outcomes, and oral hygiene behavior changes.

- Year 2: The Analyst will analyze post-program data, prepare evaluation reports summarizing outcome metrics, and support dissemination of findings to MUSC, Trident, and CCSD stakeholders for ongoing program improvement.

Travel

Travel within Charleston County will be all in-state and will cost approximately $2,808 each year, for years 1 and 2. Funds will be needed to cover mileage reimbursement for travel among the three participating Title I schools, Sanders Clyde Elementary, Mitchell Elementary, and Simmons Pinckney Middle School, and meetings between MUSC Dental School and Trident Hygiene School partners. Reimbursement will follow the institutional mileage rate for travel to school sites, community meetings, and program coordination visits.

Equipment and Supplies

1. Laptop Computers ($3,600, Year 1): Funds will be needed for the purchase of two laptops ($1,800 each) to be used exclusively for clinic data entry, evaluation tracking, and educational material preparation.
2. Dental Hygiene Supplies ($500 each year, Years 1-2): Funds will be needed to provide basic hygiene supplies, including manual toothbrushes, toothpaste, and floss, to be distributed to students to take home to maintain proper at-home oral hygiene.
3. Printing/Photocopying ($500 each year, Years 1-2): Funds will be needed for printing educational posters, consent forms, data collection tools, and evaluation reports for stakeholders and administration within the program.

Other Expenses

1. Consultant ($7,500 Year 1; $9,500 Year 2): Funds will be needed to retain a community-based dental public health consultant with expertise in school-based oral health programming. The consultant will advise on best practices for sealant and fluoride delivery, assist with training of student providers, and contribute to program evaluation and dissemination.
2. Marketing ($500 each year, Years 1-2): Funds will be needed to cover the design and production of outreach materials, such as posters, flyers, and parent newsletters, to promote participation and reinforce oral health messages.
3. Community Meetings ($4,800 each year, Years 1-2): Funds will be needed to support monthly community meetings at school and community centers to engage parents, teachers, and local stakeholders. Meetings will include educational presentations, refreshments, and opportunities for feedback to strengthen program-community relationships.

Total personnel costs are $58,338 in Year 1 and $60,088 in Year 2, which include fringe benefit rates of 43% for personnel earning $50,000 or more and 53% for personnel under $49,999, consistent with institutional standards. Year 2 includes a 3% salary increase.

Indirect costs are $23,364 for year 1 and $22,709 for year 2, calculated at the negotiated Facilities and Administration rate of 30% for CCSD Schools participating institutions.

Project Title:	Reducing Pediatric Oral Health Disparities in CCSD Title I Schools on the Charleston Peninsula
Period of Performance:	July 1, 2026 to June 30, 2027

Personnel	Salary		% effort	Calendar Months	Year 1	Year 2	Total
Harry Styles	65,000		10%	1.2	9500	9,785	19,285
Project Director	benefits @	43%			4,085	4,208	8,293
Niall Horan	45,000		25%	3.0	11,250	11,588	22,838
Project Coordinator	benefits @	53%			5,963	6,141	12,104
Louis Tomlinson	35,000		20%	2.4	7,000	7,210	14,210
Clinical Supervisor	benefits @	53%			3,710	3,821	7,531
Zayne Malik	35,000		20%	2.4	7,000	7,210	14,210
Oral Health Educator	benefits @	53%			3,710	3,821	7,531
Liam Payne	40,000		10%	1.2	4,000	4,120	8,120
Data analyst/evaluator	benefits @	53%			2,120	2,184	4,304
Total Personnel					**58,338**	**60,088**	**118,425**
Equipment					**3,600**	**-**	**3,600**
Computers x 2					3,600	0	3,600
Total Supplies					**3,600**	**0**	**3,600**
Travel					**2,808**	**2,808**	**5,616**
Foreign							-
Domestic (in state milage)					2,808	2,808	5,616
Supplies					**2,500**	**2,500**	**5,000**
Dental Hygeine Supplies					2,000	2,000	1,000
Printing/Photocopying					500	500	1,000
Other Expenses					**10,300**	**10,300**	**20,600**
Consultant					5,000	5,000	10,000
Marketing					500	500	1,000
Community Meetings					4,800	4,800	9,600
Total Direct Costs					**77,546**	**75,696**	**153,241**
Indirect Costs @	30%				23,264	22,709	45,972
Total Costs					**100,809**	**98,404**	**199,213**

X. CONCLUSION

The Oral Health Prevention Program (OHPP) was developed to address preventable oral health disparities among students between the ages of five and thirteen attending Title I schools on the Charleston Peninsula, specifically Sanders-Clyde Elementary School, Julian Mitchell Elementary School, and Simmons-Pinckney Middle School. By incorporating dental screenings, fluoride varnishes, sealant applications, and culturally tailored oral health education directly into schools for students, the program aims to reduce financial, geographic, and insurance-related barriers that often prevent low-income children from receiving the necessary preventive dental care.

The OHPP utilizes the Health Belief Model (HBM) to target the impact of perceived severity, sustainability, benefits, barriers, and cues to action on behavior change with community partnerships with CCSD, MUSC, and Trident Technical College students and faculty. The "SMART" tailored objectives ensure that the aims of the program are specific, measurable, achievable, relevant, and time-bound, and the multi-phase evaluation plan ensures that changes

in access to care, health behaviors, and dental caries prevalence can be measured to assess the impact of and refine the program. The OHPP offers a guideline for improving oral health in the targeted population, supporting academic success related to OHRQoL, and improving long-term oral health equity in Charleston County Title I elementary and middle schools.

XI. REFERENCES

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