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Impact of Integrated Education on Child Oral Health

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Impact of Integrated Education on Child Oral Health

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St. Catherine University

Capstone Project completed in partial fulfillment of the Doctor of Occupational Therapy

Degree

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Abstract

Background. Allied health professionals can apply their unique scope of practice to educate and promote oral health that best fits families' daily habits, routines, and cultural practices (Anderson et al., 2020; Gold & Tomar, 2018; Iwao et al., 2019).

Purpose. The primary purpose of this capstone project was to increase family utilization of oral healthcare services and daily oral hygiene practices through cultivating positive oral health experiences for all children.

Approach. A child intake questionnaire and social story were created to prepare children for their dental exam, provide child-specific oral health education, and understand childrens' oral health habits and dental experiences for children receiving dental services. Child-reported responses were evaluated using descriptive and categorical analysis to understand child dental

experiences before and after their dental exam. **Outcomes.** 378 children completed the child intake questionnaire. 68% of children served had poor oral hygiene, and 32% had fair to good oral hygiene. Children with fair to good oral hygiene reported slightly more positive oral health experiences when compared to children with poor oral hygiene.

Implications. Ready, Set, Smile's interdisciplinary team should further evaluate the impact of various educational methods and mindfulness activities on child dental experiences. For example, do children who receive oral health education prior to their dental exam report more positive oral health experiences compared to children who did not receive education?

Introduction

Ready, Set, Smile and the doctoral capstone occupational therapy student collaborated to educate children, families, teachers, and interprofessional team members about key concepts related to oral health. Ready, Set, Smile Dentistry & Education (RSS) is a nonprofit organization in Minneapolis, Minnesota that is composed of volunteer dentists, dental therapists, and community health workers. They partner with 27 early education programs and school sites to serve and educate children and families across the Twin Cities (Ready, Set, Smile, n.d.b,f). Their mission is to use “education and preventive services to prepare and empower all children in (the) community to care for their oral health” (Ready, Set, Smile, n.d.b, sentence 1), and they envision children will “have an opportunity to be free from dental disease” (Ready, Set, Smile, n.d.b, sentence 2).

Since 2019, St. Catherine University occupational therapy (OT), public health, and nutrition students and faculty have collaborated with RSS to enhance the quality of care provided to recipients. The goal of these partnerships was to expand the dental workforce in order to increase family access and utilization of oral health and education services (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022). During a Needs Assessment conducted in April 2022, RSS identified three main priorities for their services: (1) ensure education meets the needs of families and motivates them to attend oral health education in the future, (2) implement daily oral health habits and routines within childrens’ early education and school environments, and (3) ensure all children have a positive oral health experience (Appendix A – Needs Assessment).

Background Literature

The priorities of RSS are grounded in evidence-based research. Children of families living within low socioeconomic communities are at an increased risk of developing dental caries due to limited access and affordability of oral healthcare services (Chestnutt, 2014; Gold & Tomar, 2018; WHO, n.d.). Furthermore, these children experience higher rates of untreated dental caries, which is associated with poor oral health, tooth decay, pain, and discomfort (Blake et al., 2015; Chestnutt, 2014; Gold & Tomar, 2018; Nota et al., 2019; WHO, n.d.). Children's participation in everyday activities, such as academic performance, eating and sleep, play, and socialization, are negatively impacted by untreated dental caries (Blake et al., 2015; Chestnutt, 2014; Nota et al., 2019; Stein et al., 2012).

In preparation for this capstone project, a scoping review was conducted in June to August 2021. The purpose of the scoping review was to “understand the contextual supports and barriers to oral health services and hygiene practices for families of low-income status in order to better inform healthcare service delivery” (Appendix B – Scoping Review, p.6). Key themes identified from the scoping review included the importance of partnering with community-based programs and services, educating interdisciplinary oral health teams, integrating caregiver oral health literacy within education programs, and implementing oral health-related quality of life assessment tools to improve both access and utilization of oral healthcare services and hygiene behaviors for high-risk populations (Appendix B – Scoping Review). Before the capstone project experience began, scoping review findings and a Needs Assessment were used to determine strategies that would benefit Ready, Set, Smile and the children they serve.

Overall, Ready, Set, Smile's service delivery methods are in alignment with current best practices. For example, RSS provides preventive oral health services within the school environment to reduce barriers to access services and collaborates with interdisciplinary team members to deliver oral healthcare and education. This capstone project focuses primarily on enhancing interprofessional knowledge and approaches in providing child-centered, atraumatic oral healthcare and education services.

Significance

Recent goals of local, national, and global population health initiatives focus primarily on improving access to oral healthcare services for families of low socioeconomic status (Blake et al., 2015; Chestnutt, 2014; Healthy People 2030, n.d.; HHS, n.d.; MN Department of Health, n.d.c; WHO, n.d.). Despite improvements in access to oral healthcare services, the gap between access and families who utilize these services continues to widen (Blake et al., 2015; HHS, n.d.; MN Department of Health, n.d.a, b, c, d.; Ready, Set, Smile, 2020; WHO, n.d.). Allied health professionals may be beneficial for expanding the dental workforce to increase family utilization of both oral healthcare services and daily hygiene practices. Allied health professionals can apply their unique scope of practice to address this health and wellness need, through educating and promoting health that best fits the families' daily habits, routines, and cultural practices (Anderson et al., 2020; Gold & Tomar, 2018; Iwao et al., 2019). This capstone project aims to bridge the gap between access and family utilization of oral healthcare services.

Purpose

The primary purpose of this capstone project was to increase family utilization of oral healthcare services and daily oral hygiene practices through cultivating positive oral health experiences for all children served by RSS, educating children and/or families about oral hygiene, and addressing family-specific needs (Appendix A – Needs Assessment). An additional aim of this capstone project was to expand the dental workforce by utilizing interprofessional team members consisting of dental providers, community health workers, teachers, occupational therapy student and faculty about current best practices in promoting health behavior change through implementing education-based health literacy standards within the school and daycare environments (Appendix A – Needs Assessment).

Approach

To support positive oral health experiences and implement developmentally appropriate and health literate education, the author reviewed evidence from literature, gathered information through observation of RSS services and a peer review process to develop several materials. The project involved gathering additional information from RSS team members and clients through clinic observations, team meetings, and review of existing processes and educational programming. Next, the following project activities occurred: 1) Creation and implementation of a Child Clinic Questionnaire form/process, 2) Creation and implementation of a social story within the child and family education curriculum, 3) Review of existing classroom curriculum for preschool aged children, 4) Review of school and daycare professional oral health attitudes, habits, and experiences within the school environment, and 5) Review of qualitative feedback from the RSS team regarding capstone project activities. St. Catherine University Institutional

Review Board (IRB) application for exempt research study was submitted and approved for activities 1, 2, and 4 listed above. Due to the nature of activity 3 and 5, IRB approval was not required. The following sections will describe the assessment tools and methods for each capstone project activity.

Child Clinic Questionnaire

The purpose of the Child Clinic Questionnaire (CCQ) was to provide child-specific education and support positive dental experiences. Initially, the researcher and the RSS team discussed what information would be most helpful for them to know and how best to reduce “challenging behaviors” experienced during the dental clinic services. Next, a brief research review was conducted to select a reliable and valid assessment tool for understanding dental-related anxiety with children. Three out of ten RSS team members provided feedback about the initial draft of the questionnaire. The CCQ was then revised to match their feedback, and the RSS team discussed implementation of the questionnaire during a staff meeting.

The CCQ included five close-ended questions about children’s oral health habits and routines in the form of yes/no and frequency-based format. The remaining two questions were related to the child’s feelings using the Novel Animated Emoji Scale (Figure 1) containing six emojis that mirror different emotions ranging from very happy to very unhappy (Sett et al., 2019). The scale consists of 2-point scores so children could score anywhere from 0 to 10 points with 0 being very happy. The final question allowed children to ask any questions both before and after their dental exam. Qualitative data was noted on the emoji scale or in the questions section. Refer to

Appendix C for more information about the specific questions within the Child Clinic Questionnaire.

Figure 1

Novel Animated Emoji Scale

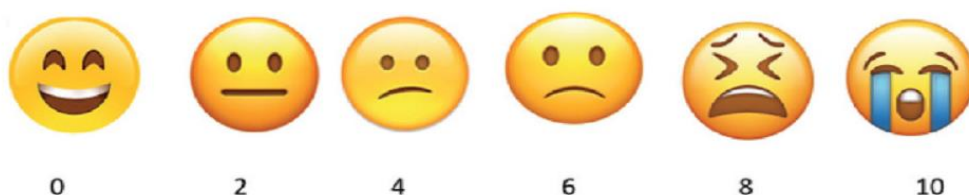


Figure 1. Novel Animated Emoji Scale is used to rate dental-related anxiety among children. Scale ranges from very happy to very unhappy (Khatri et al., 2021).

Preliminary data from the CCQ was administered from May 18, 2022 to July 20, 2022 by the occupational therapy student, community health workers, and volunteers. Children who met inclusion criteria for CCQ inclusion, were children ages 3 years to 16 years old from seven different school and preschool partnership sites. Children ages 2 years and younger, and children with limited communication skills were excluded from oral health habits, routines, and dental experience questions; however, their Cavity Risk Assessment (CRA) results were documented for RSS's data collection methods.

Based on child responses, the occupational therapy student, volunteers, and/or community health workers provided child-specific oral health education and quick mindfulness strategies to reduce dental-related anxiety, such as taking deep breaths, coloring, talking to a friend, and/or giving a hug. Staff handed the questionnaire to the dental providers or community health workers assisting the dental providers upon the child's exam. The dental providers then reviewed the child's answers and provided

child-specific oral health education and encouragement based on the child's responses. After the exam, the community health worker, occupational therapy student, or volunteer asked the child how they were feeling after the exam. Based on the child's responses, staff provided opportunities to reduce anxiety, such as getting a drink of water, going for a quick walk, picking out a prize, talking to a friend, or getting a hug.

The Child Clinic Questionnaire data was gathered after every clinic in seven partnership sites (four schools and three preschools). Each questionnaire and response were inputted using Google Forms. The RSS treatment list and New England Survey Systems (NESS) documentation were used to verify information from the child questionnaire. Data analysis was performed using Google Forms and Excel. Descriptive statistic measures and categorical analysis were used to analyze the data. The specific research questions analyzed included: (1) What are oral hygiene practices for children of high risk, non-urgent referral, and urgent referral? (2) What are children's feelings before and after the dental exam? And, (3) What are school-specific demographics, oral health practices, and child classifications?

Social Story

The social story was developed as part of the recommendations from the Master of Occupational Therapy (MAOT) students who were previously involved in this research project. After a literature review, MAOT students educated the RSS team about sensory-based processing and ways to support positive experiences for all children. One of their key recommendations that informed this capstone project was to implement a social story to reduce anxiety during the dental exam.

The purpose of the social story, *Going to the Dentist*, was to prepare children for the dental exam on what to expect, normalize their feelings prior to seeing the dental

provider, and educate them on what to do in certain scenarios (Appendix D). A brief review was conducted on current best practices for creating social stories using OT textbooks and materials throughout St. Catherine University OT curriculum. The social story was sent to RSS mentors for feedback. It was then revised and narrated based on feedback from site mentors. After revisions were made, the occupational therapy student and capstone site mentor used health literacy assessment tools, SMOG Index, Flesch Kincaid Index, Sustainability Assessment of Materials (SAM), and Patient Education Material Assessment Tool for Audio Visual Materials (PEMAT - A/V) to evaluate readability (literacy), comprehension, suitability (appropriate for target audience), understandability, actionability, and age-appropriate components of the social story (Doak et al., 1996; McLaughlin, 1969; Shoemaker, 2014). Understandability scores are interpreted as “when consumers of diverse backgrounds and varying health literacy can process and explain key messages” (Shoemaker, 2014, p. 1). Actionability scores are interpreted as “when consumers of diverse background and varying levels of health literacy can identify what they can do based on the information presented” (Shoemaker, 2014, p. 1). It was revised again and re-evaluated to assess improvements in health literacy standards for the printable and narrated social story.

After final revisions were made, the social story was disseminated to five different preschool classrooms. The occupational therapy student read the social story as part of the education sessions to the preschoolers and school-aged children. Then, the narrated social story was texted to 88 parents and caregivers from four different preschool classrooms and one summer school program on the following dates: July 11, 2022; July 18, 2022; July 19, 2022; July 25, 2022; and July 26, 2022. YouTube

Analytics were used to evaluate the number of views and average viewing time. A small hard copy of the social story was also sent home with the children after their dental exam as part of their oral hygiene take-home kits. Refer to Appendix D to view the social story.

Preschool Education Curriculum

Ready, Set, Smile's oral health education curriculum was reviewed for preschool-aged lessons: (1) Visit to the Dentist, and (2) Brushing. The purpose of this review was to ensure that the lessons encompass health literacy and are developmentally appropriate for preschool-aged children from ages two to five years. Three different health literacy tools (1) SMOG Index, (2) Suitability Assessment of Materials (SAM), and Patient Education Material Assessment Tool for Printable Materials (PEMAT- P) were used to evaluate readability (literacy), suitability (appropriate for target audience), understandability and actionability (defined above) of RSS's two preschool education lessons (Doak et al., 1996; McLaughlin, 1969; Shoemaker, 2014). Then, recommendations were provided to RSS Operations Director and community health workers for key considerations when educating preschoolers.

School Professional Collaboration

The RSS team created a video for teachers describing the education and clinic services they provided, as well as educating teachers about their role in supporting students and the RSS team. The video and script were created and revised as a team. Then, the occupational therapy student completed the voiceover for the video. Next, the occupational therapy student created an oral health survey for school professionals and daycare providers (Appendix E – Oral Health & School Professional Survey). The

survey consisted of 19 total questions, including 14 close-ended questions and five open-ended questions. Two of the 14 close-ended questions included Likert scale questions on a four-point scale.

The purpose of the survey was to understand school professionals' oral health attitudes, beliefs, and experiences in the school environment to inform RSS of additional education and clinic need areas. Ready, Set, Smile will send this survey to school and preschool staff in the upcoming year to gather baseline information for building rapport with school professionals, as well as identifying supports and barriers to implementing oral health habits and routines within each partnership site after school and preschool staff members view RSS's *Teacher Video*.

Outcomes

The primary outcomes for the capstone project focused on the results of the Child Clinic Questionnaire, Social Story, and Classroom Curriculum.

Child Clinic Questionnaire

Below are the preliminary results for the child-reported responses from the Child Clinic Questionnaire. Preliminary data includes child responses within sites served from May 18, 2022 to July 20, 2022 due to the on-going data collection on the CCQ and Social Story in the final weeks of the capstone project and timeline for completion of analysis for the capstone course. Additional data was gathered from children during dental clinics held from July 26, 2022 to August 3, 2022. Due to the ongoing data collection and the site's desire to examine trends at a population level, descriptive statistics for the population as a whole and for children in the high risk and no risk

categories were used for this project dissemination. Once all data collection is complete, further analysis will be explored using paired statistical analysis.

Demographics

391 total children were served across four schools and three preschools from May 18, 2022 to July 20, 2022 from infancy to 8th grade. 378 children ages 3 years to 8th grade completed the CCQ and participated in informal mindfulness activities. The figure below shows the percentage of children served according to age level.

Figure 2

Percent of Children Served According to Grade Level

Total Percentage of Children Served According to Grade Level

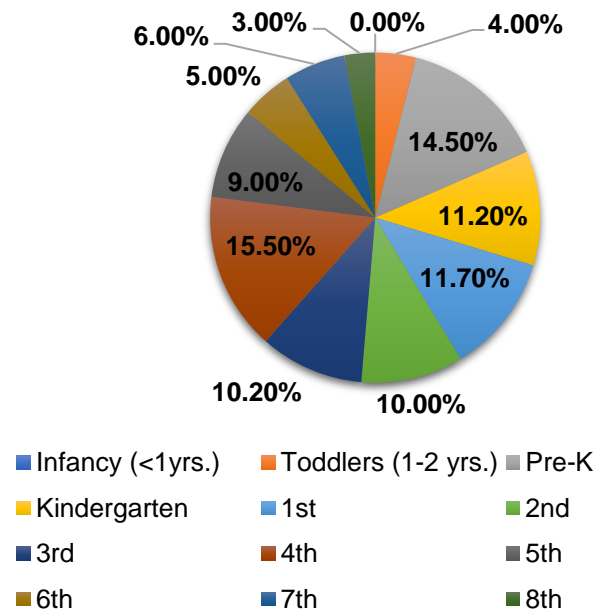


Figure 2. 4th grade and Pre-K were the largest percentages served from May 18, 2022 to July 20, 2022

Figure 3 shows percentages of classification and levels of risk for children served. High Risk classifications account for 51% of children served during the May to July time period. This indicates that about half of children served are at risk of cavities and oral health diseases due to poor oral hygiene. However, when combined with Non-urgent and Urgent referrals, the percentage of children with poor oral hygiene increases to 68%. Alternatively, 32% of children served are categorized in the Other category showing that these children have fair to good oral hygiene.

Figure 3

Child Classifications as Indicated By Dental Providers.

Classifications of Children

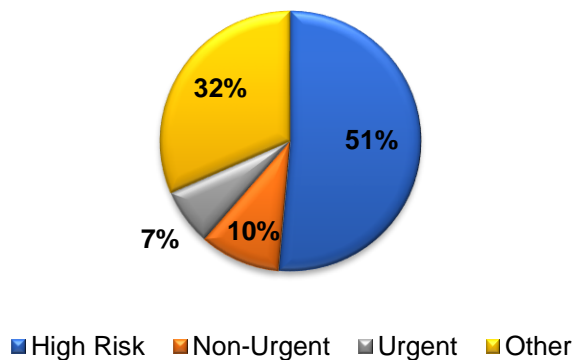


Figure 3. 387 children (includes infants and toddlers) classified according to High Risk, Non-Urgent Referral, Urgent Referral, and Other. High Risk includes children with history or presence of cavities, white spot lesions, multiple medications, poor oral hygiene, an oral appliance, and/or special needs. Non-Urgent Referral indicates minor decay treated with a simple filling, no pain, and/or minimal infection or swelling (A. Della Torre & R. McPherson, personal communication, July 11, 2022). Urgent Referral is classified according to pain, swelling, infection, and/or a non-restorable tooth requiring a

referral for extraction (A. Della Torre & R. McPherson, personal communication, July 11, 2022). Other category includes children with no history or presence of cavities, and fair to good oral hygiene (Ready, Set, Smile, 2021).

Child-Reported Oral Health Habits & Routines

Figure 4 illustrates child-reported oral health habits and routines. 69% reported seeing a dentist before. 96% have a toothbrush at home. 52% have floss at home. 57% reported brushing their teeth at least twice per day. And, 20% reported flossing their teeth at least one time per day. See Figure 4 for more information about overall oral hygiene patterns.

Figure 4

Child-Reported Oral Health Habits & Routines According to Current Best Practices

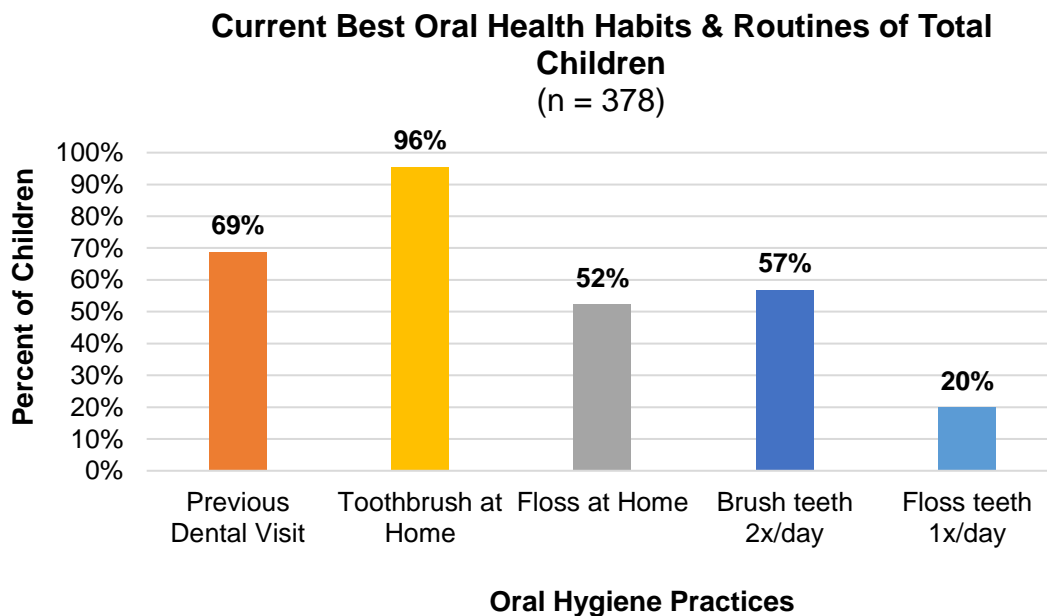


Figure 4. Brushing teeth 2x/day included either morning and night, morning and afternoon (n=1); after school and at night (n=2), 3x/day (n=4), and morning, afternoon, and night (n=5).

Figure 5 shows child-reported brushing habits according to risk level and classification. 48-55% of children identified as High Risk, Non-urgent Referral, Urgent Referral and Other reported brushing their teeth at least twice a day. For children who brush their teeth once per day, 15-23% of children reported brushing their teeth in the morning, and less than 10% of all children reported brushing their teeth at night.

Figure 5

Child-Reported Brushing Habits According to Classification

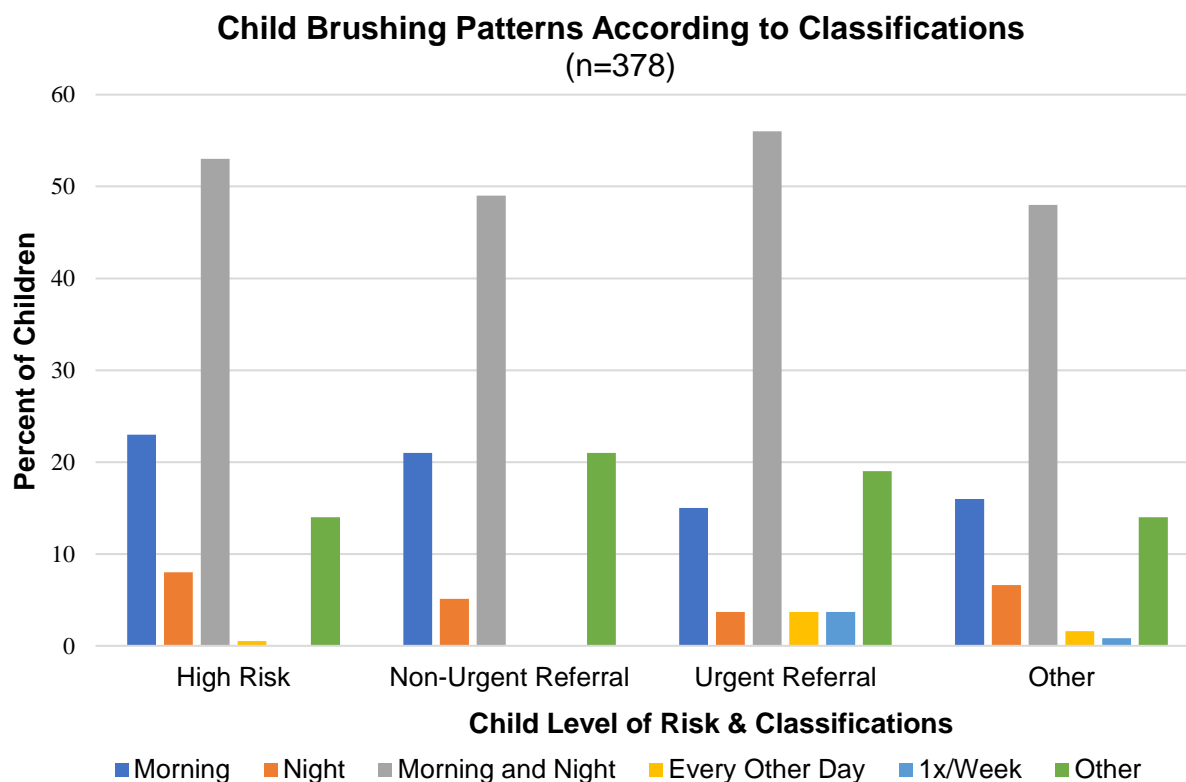


Figure 5. “Other” brushing responses included Never, “I don’t know”, “Sometimes”, “A little bit”, Multiple times a week, “At Grandma’s house”, and 3x/day.

Child-Reported Dental Experiences

Children reported their feelings both before and after their dental visit. Across all preschool and school age children reported a range of feelings and emotions from happy and content such as “happy”, “fine”, “good”, “neutral”, and “just normal” to excitement such as “brave”, “excited” to worried or nervous including “confused”, “nervous”, “irritated”, “stomach hurts”, “timid”, “shy”, “scared”, “anxious”, and “worried”. These feelings were categorized according to Calm/Content (0-2), Mildly Anxious/Fearful (3-6), and Highly Anxious/Fearful (7-10). Children’s ratings before and after their dental exam were first evaluated for all children. Then, ratings were compared to ratings of children with no decay, children at risk of cavities, and children with presence of oral health diseases.

According to Figure 6, 79.2% of all children reported feeling Calm/Content before the exam, and 82% reported feeling Calm/Content after the dental exam. 80% of the No Risk group reported feeling Calm/Content before the dental exam, and 84.6% reported feeling Calm/Content after the dental exam. Lastly, 78.8% of children identified as High Risk, Non-urgent Referral, and Urgent Referral reported feeling Calm/Content before the exam, and 80.9% reported feeling Calm/Content after the dental exam.

Figure 6

Dental Experiences of All children vs. No Risk and High-Risk Groups.

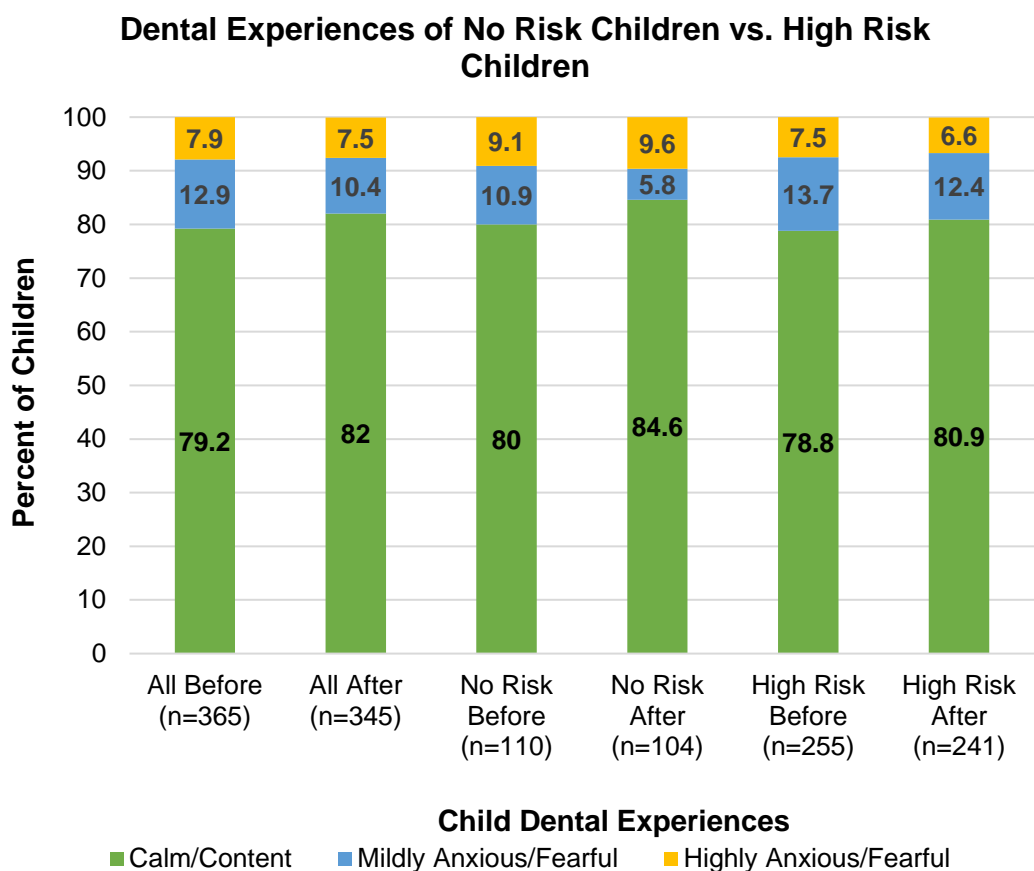


Figure 6. Calm/Content included ratings of 0-2, Mildly Anxious/Fearful included ratings 3-6, and Highly Anxious/Fearful included ratings 7-10 on the Novel Animated Emoji Scale.

Social Story

27 out of 88 families viewed the narrated social story. The average viewing time of the 3 minute 50 second video was 1 minute and 31 seconds. Health literacy assessment scores showed that the social story met understandability and actionability

recommendations after revisions were completed. A score of 70 to 100% on the SAM means it is a superior material. “The higher the score on the PEMAT, the more understandable or actionable the material” (PEMAT, 2014, p. 2). For example, before revising the social story, it scored 70% in understandability. After revisions were made it scored an 80% in understandability. However, according to the SMOG Index Score and Flesch Kincaid Reading Score, readability scores for full comprehension remained the same before and after revisions. Despite no change in readability scores after revisions, 6th grade readability scores still meet health literacy recommendations (Doak et al., 1996). Refer to Table 1 for social story health literacy assessment scores.

Table 1

Social Story – Health Literacy Assessment Scores

| Tool | Health Literacy Measure | Initial Scores | Post Revision Scores |
|---------------------------------------------------------------------------|-----------------------------------|---------------------------------------------|---------------------------------------------------|
| SMOG Index Score | Full comprehension | 6.0 (6 th grade) | 6.0 (6 th grade) |
| Flesch Kincaid Reading Score | Readability | 3.8 (3 rd grade) | 3.9 (3 rd grade) |
| Suitability Assessment of Materials (SAM) | Suitability | 78% (superior material) | 83% - 86% (superior material) |
| Patient Education Material Assessment Tool for Audiovisuals (PEMAT – A/V) | Understandability & Actionability | 70% understandability 100% actionability | 80% - 83% understandability 100% actionability |

Table 1. Readability scores were higher than skill level for intended audience (preschoolers); however, understandability (70%) and comprehension scores were superior for intended audience. Readability (SMOG and Flesch Kincaid) stayed about

the same after revisions were made. Understandability and comprehension scores increased after revisions.

Preschool Education Curriculum

Ready, Set, Smile’s oral health education curriculum was reviewed for preschool-aged lessons: (1) Visit to the Dentist, and (2) Brushing. Health literacy assessment tools were used to evaluate the lessons’ readability, understandability, comprehension, and actionability for the intended audience (i.e. preschoolers, caregivers, and oral healthcare staff). Refer to Table 2 and 3 for health literacy assessment scores.

Table 2

Visit to the Dentist Lesson – Health Literacy Assessment Scores

| | Health Literacy Measure | Target Audience | | |
|----------------------------------------------------------|-----------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|
| | | Educators | Children (Pre-K – K) | Parents/Caregivers |
| SMOG Index Score | Full comprehension | 9.0 (9 th grade) | 8.0 (8 th grade) | 9.0 (9 th grade) |
| Flesch Kincaid Reading Score | Readability | 3.1 (3 rd grade) | 2.0 (2 nd grade) | 7.0 (7 th grade) |
| Suitability Assessment of Materials (SAM) | Suitability | 71% (superior material) | 84% (superior material) | 74% (superior material) |
| Patient Education Material Assessment Tool for Printable | Understandability & Actionability | 89% understandability 20% actionability | 88% understandability 60% actionability | 54% understandability 50% actionability |

Materials
(PEMAT-P)

Table 2. Visit to the Dentist lesson is suitable for its intended target audience (SAM). Comprehension and readability scores are high for the child discussion and take-home handout for parents/caregivers, indicating a need for simplified language (SMOG and Flesch Kincaid). Educator page and child discussion have high percentages of understandability; however, the caregiver take-home handout is 54% understandable. Visit to the Dentist rates low (20-60%) on actionability for all three target audiences.

Table 3

Brushing Lesson – Health Literacy Assessment Scores

| | Health Literacy Measure | Target Audience | | |
|------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|
| | | Educators | Children (Pre-K – 1st) | Parents/Caregivers |
| SMOG Index Score | Full comprehension | 12.0 (12 th grade) | 5.0 (5 th grade) | 8.0 (8 th grade) |
| Flesch Kincaid Reading Score | Readability | 4.4 (4 th grade) | 2.0 (2 nd grade) | 5.4 (5 th grade) |
| Suitability Assessment of Materials (SAM) | Suitability | 59% (adequate material) | 79% (superior material) | 79% (superior material) |
| Patient Education Material Assessment Tool for Printable Materials (PEMAT-P) | Understandability & Actionability | 80% understandability 60% actionability | 69% understandability 60% actionability | 89% understandability 60% actionability |

Table 3. Brushing lesson is a superior material for children and caregivers and is an adequate material for educators (SAM). Comprehension and readability scores are high for the child discussion and take-home handout for parents/caregivers, indicating a need for simplified language (SMOG and Flesch Kincaid). Educator page and caregiver handout have high percentages of understandability; however, the child discussion is 69% understandable. Brushing lesson rates low (60%) on actionability for all three target audiences.

Implications

Implications for this capstone project are divided according to the three deliverables (1) Child Clinic Questionnaire, (2) Social Story, and (3) Preschool Education Curriculum.

Child Clinic Questionnaire

Results from oral health habits and routines data identify that current best practices for brushing and flossing have not been met by children served. Identified improvement areas for children at risk or with presence of oral health diseases include sustainable habits and routines to achieve optimal oral health. For example, brushing in the morning and night with an emphasis on the importance of night-time brushing, and access to floss at home. Implications indicate the need to supply families with floss and the importance of implementing sustainable brushing and flossing routines in the home and school environments to support optimal oral health.

Additionally, children reported similar dental experiences regardless of risk level. So, recommendations for the Ready, Set, Smile team are to further evaluate the impact of various educational methods and mindfulness activities on child dental experiences.

For example, the Ready, Set, Smile team might examine if children who receive oral health education prior to their dental exam report more positive oral health experiences (compared to children who did not receive education).

Social Story

Based on health literacy assessment scores, the developed oral health social story meets health literacy standards for suitability, understandability, and actionability. *Going to the Dentist* meets comprehension and readability health literacy standards; however, it may require further simplification to better meet younger children's (1 to 3 years) developmentally appropriate comprehension skills.

Overall, the social story can be used as part of Ready, Set, Smile's preschool education curriculum in preparing children for their dental visit. RSS can continue to text families the oral health social story to increase repetition of education and expand to children who may not have received education in the classroom. However, this social story requires further evaluation on the effectiveness in preparing children for their dental exam.

Preschool Education Curriculum

Health literacy assessment scores on the preschool education curriculum vary according to target audience. Comprehension and readability scores only meet average literacy levels criteria for children and parents/caregivers among all 3 educational materials, indicating a need to simplify language to incorporate inclusive educational materials for individuals with lower literacy skills. Educational materials are rated superior for all materials except for *Brushing – A Note for Educators*, indicating a need to include visual aids to support background information. Actionability scores are lowest

for all educational materials indicating a need to incorporate modeling and visual aids to increase self-efficacy for oral health behaviors.

Recommendations

Based on the findings that current best oral health practices are not being met, Ready, Set, Smile should prioritize expanding oral health education to families, schools, and preschools to improve oral health habits, routines, and oral health experiences within the home and school environments. Occupational therapists are beneficial allied health professionals equipped in promoting oral health and supporting emotional regulation for participating in oral care and hygiene. Dental care teams and community-based oral health teams can benefit greatly from occupational therapist approach in educating and supporting children's oral health experiences. Additional recommendations are specified below.

Ready, Set, Smile

- Continued implementation of clinic and education programming – CCQ and social story.
- Disseminate school professional survey to teachers and day care providers to provide continuous improvement methods for working with a variety of school cultures.

Dental Clinic

- Consult with occupational therapy students and faculty regarding environmental analysis and sensory-based strategies to continue to support positive oral health experiences for all children.

- Continue providing choices, educating children about dental tools, and implementing more favorable choices of fluoride during dental clinic.

Oral Health Education

- Evaluate additional lessons using health literacy assessments tools.
- Increase refinement of classroom curriculum to match developmental needs of children.
- Provide staff education training for educating special populations.

Occupational Therapy Profession

- Educate dental care teams about sensory processing, developmental norms, emotional regulation, and trauma-informed care.
- Collaborate with dental care teams and community-based programs in oral healthcare with a focus on oral health promotion and education.

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Appendix A – Needs Assessment

Doctoral Capstone Project Proposal Needs Assessment

| | |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Student Name | Rachel McPherson |
| Primary Area of In-Depth Exposure | Education |
| Secondary Area of In-Depth Exposure | Advocacy |
| Working Title of Doctoral Capstone Project | Integrating Interprofessional Approaches into Oral Health Education |
| Capstone Mentor name and credential | Ann Copeland and Dr. de Sam Lazaro, OTD, MA, OTR/L |
| Capstone Mentor role and expertise | Ready, Set, Smile's Director of Operations and St. Catherine University's Occupational Therapy Program Director |
| Capstone Site | Ready, Set, Smile Education & Dentistry |
| Capstone Faculty Advisor | Dr. Jennifer Hutson, PhD, OTR/L, ATP |
| Date | <u>05/02/2022</u> |

Part 1: Description of the Organization or Community

Ready, Set, Smile Dentistry & Education is a nonprofit organization in Minneapolis, Minnesota that partners with 12 early education programs and 14 school sites to provide oral health care and education services to children and families across the Twin Cities (Ready, Set, Smile, n.d.b,f). Ready, Set, Smile was founded in 2013, and is composed of a team of volunteer dentists, dental therapists, and community health workers. They have been serving infants, children ages 2 to 15 and their families for the past nine years (Ready, Set, Smile, n.d.b,c,d,e,f). Since 2019, Ready, Set, Smile has partnered with St. Catherine University to evaluate their current oral health education program, and to enhance the quality of care they provide to recipients (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022). For the past 2 years, St. Catherine University occupational therapy, public health, and nutrition students and faculty have expanded on previous dental health collaborations to support Ready, Set, Smile's aim in extending the dental workforce, as well as increasing family access and utilization of oral health and education services (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022).

Ready, Set, Smile's mission is to use "education and preventive services to prepare and empower all children in (the) community to care for their oral health" (Ready, Set, Smile, n.d.b) with the ultimate vision that all children within the community will "have an opportunity to be free from dental disease" (Ready, Set, Smile, n.d.b). Their strategic plan to support their mission and vision includes "improv(ing) children's health with families, schools, and systems; "strengthening organizational sustainability" through increasing revenue and aligning policies with their organizational needs; and "operat(ing) with excellence" by providing continuing education for Ready, Set, Smile staff about current best practices and optimizing each members roles to best serve the community (Ready, Set, Smile, n.d.b). Overall, Ready, Set, Smile values interprofessional and community collaboration to support the oral health of the children and families they serve.

Primary stakeholders include the Ready, Set, Smile oral health care team, Ready, Set, Smile board team, early education and school site professionals partnered with Ready, Set, Smile, and the children and families within these partnership sites (Ready Set Smile, n.d.b,c,d,e,f, g). Secondary stakeholders include St. Catherine University and University of Minnesota students partnered with Ready, Set, Smile, volunteer dentists, Minnesota legislators, dental health sponsors, and Twin Cities dental health practitioners (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022; Ready Set Smile, n.d.e,g).

Ready, Set, Smile Priorities

Priority #1: Ensure education meets the needs of families and they will want to attend oral health education in the future.

- Primary Goal: Increase family participation to educate families about current best practices in oral health.
- Strategy: Conduct family-centered focus groups to identify family oral health literacy, cultural practices, and needs to access and utilize oral health care services and behaviors. Modify oral health care services and education dissemination based on focus group results.

(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)

Priority#2: Implement daily oral health habits and routines within the children's early education and school environments.

- Primary Goal: Change school culture to support the oral health of every child and student.

- Strategy: Collaborate with early education programs and school sites to increase “buy in” and support positive oral health behaviors within the early education/school environment.

(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)

Priority#3: Ensure all children have a positive oral health experience.

- Primary Goal: Create and foster an atraumatic oral health experience for every child and student in order to provide positive experiences that influence their oral health attitudes and behaviors.
- Strategy: Develop evidence-based strategies to reduce anxiety, support sensory modulation, and improve emotional regulation. Use an occupational therapy lens to educate the Ready, Set, Smile oral health care team and school professionals about strategies to reduce anxiety and “challenging behaviors”.

(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)

Part 2: Preliminary Information and Resources for Learning about a Priority/Need/Issue

Priority #1: Ensure education meets the needs of families and they will want to attend oral health education in the future.

Internal Information and Resources

| Name of Information or Resource | Description of Information or Resource | Brief Summary of Key Learning |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Dr. Adele Della Torre</p> <p>(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)</p> | <p>Ready, Set, Smile Co-founder and practicing dentist.</p> | <p>Discussed Ready, Set, Smile's current supports, barriers, and priorities for the next 4 months. Priorities are noted in Part 1.</p> |
| <p>Ann Copeland</p> <p>(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)</p> | <p>Ready, Set, Smile Operations Director</p> | <p>Discussed Ready, Set, Smile's current supports, barriers, and priorities for the next 4 months. Priorities are noted in Part 1.</p> |
| <p><u>Ready Set Smile 2020-2021 Annual Report</u></p> <p>(Ready, Set, Smile, n.d.a)</p> | <p>Annual Report</p> | <p>Summary of the past years highlights, children served compared to previous years, expenditures, and areas of growth.</p> |
| <p><u>Ready, Set, Smile Oral Health 2020 Data Forms</u></p> <p>(de Sam Lazaro, 2020)</p> | <p>Research data conducted in 2019-2020 during COVID-19 pandemic disseminating oral health education materials to families along with family feedback.</p> | <p>Access was a primary barrier throughout the pandemic but also just connecting with families due to phone service and current residence. However, most families found the oral health hygiene materials the most helpful and appreciated the fun activities for the children.</p> |
| <p><u>Ready, Set, Smile Education Curriculum</u></p> <p>(Ready, Set, Smile, 2019)</p> | <p>Education curriculum for children grades Pre-K to 6th grade.</p> | <p>Curriculum is based on grade level and covers categories regarding nutrition, cavities, vaping, and oral health related behaviors (toothbrushing, flossing, etc.).</p> |

External Information and Resources

| Name of Information or Resource | Description of Information or Resource | Brief Summary of Key Learning |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>Minneapolis Public School Early Childhood Screening Report 2020-2021</u></p> <p>(MN Department of Education, n.d.)</p> | <p>Minnesota Department of Education provides annual reports for Early Childhood Screenings of each school district. However, site is limited in schools reported and I do not see most of the charter schools listed on this site that Ready, Set, Smile is partnered with.</p> | <p>2,314 total children (ages 3 to 6) were screened for vision, hearing, developmental progress, and health coverage. Community public health initiatives remain in place to expand early screenings.</p> |
| <p><u>CDC Basics of Oral Health</u></p> <p>(CDC, 2021)</p> | <p>Center of Disease Control provides data regarding disparities in oral health by age and race, data tools assessing oral health, and evidence-based strategies to reduce oral health disparities within communities.</p> | <p>Oral health disparities significantly impact children of color and children in low-income households. School sealant programs are one evidence-based strategy aimed to reduce oral health disparities among these populations.</p> |
| <p><u>Vulnerable Populations Footprint</u></p> <p>(CARES, 2015-2019a,b)</p> | <p>Community Commons generates a demographic report by location identifying level of income, race/ethnicity, gender, and percentage of community members living in poverty.</p> | <p>Minneapolis, MN: From 2015-2019 - 35,285 total children (out of 113,769) live in MPLS. 33,384 community members live in poverty. 38% of children live in poverty (below 100% federal poverty level). (CARES, 2015-2019a)</p> <p>St. Paul, MN: From 2015-2019 – 38,384 total children (out of 125,435) live in St. Paul. 36,505 community members live in poverty. 38% of children live in poverty (below 100% federal poverty level). (CARES, 2015-2019b)</p> |
| <p><u>A Practitioner's Guide to Advancing Health Equity</u></p> <p>(CDC, n.d.)</p> | <p>Center of Disease Control (CDC) guide to preventing disease within communities. Section 1 includes strategies to promote health equity within communities. Sections 2-4 include strategies specific to tobacco use, nutrition, and exercise.</p> | <p>Strategies align with the Community Tool Box needs assessment strategies.</p> |

Gaps in Learning

Priority #1: Ensure education meets the needs of families and they will want to attend oral health education in the future.

Gaps in Learning

1. Who are the primary caregivers, their background, and demographic information?
2. What are families' current habits/routines, oral health knowledge, and oral health behaviors?
3. What are each family's culture and values related to oral health and overall health?
4. What are the access and utilization barriers of each family and/or of each site?
5. What platform is most beneficial for families to access education - virtual vs. in-person?
6. What are Ready, Set, Smile's policies and procedures for providing oral care and education?
7. When are families most available to participate in family education programs and daily activities?
8. How does Ready, Set, Smile modify their education programs and activities to meet the needs of families?
9. How does Ready, Set, Smile currently overcome access barriers to increase family utilization?
10. How have other organizations across the U.S. supported oral health of populations within low SES?
11. Can Ready, Set, Smile education program be a requirement for early education programs like Family Partnership?
12. Are there other Twin Cities organizations that are aiming to achieve the same mission as Ready, Set, Smile. If so, are there opportunities to collaborate?

Priority #2: Implement daily oral health habits and routines within the children's early education and school environments.

Gaps in Learning

1. Who is currently participating and consistently collaborating with Ready, Set, Smile?
2. Who are the current sites and prospective sites' background and demographic information?
3. What are the culture and values of each early education program and school site?

4. What are the similarities and differences between sites in providing education and clinic?
5. What are Ready, Set, Smile's policies and procedures for providing oral care and education?
6. How does Ready, Set, Smile modify their education approach to match the culture, values, and needs of each partnership site?
7. Why are some family education programs mandatory and others voluntary?

Priority #3: Ensure all children have a positive oral health experience.

Gaps in Learning

1. Who is working with children during clinic and education?
2. Who are the children that are experiencing anxiety or demonstrating "challenging behaviors"?
3. What are the behaviors of children during clinic and education?
4. What are the antecedents, behaviors, and consequences associated with child anxiety and "challenging behaviors"?
5. What are the expectations of the children before, during, and after oral health screens and education activities?
6. What are the common beliefs or patterns associated with anxiety/ "challenging behaviors"?
7. What do Ready, Set, Smile staff already know about trauma-informed care and sensory processing?
8. When do these behaviors typically occur?
9. Where are the children receiving oral health care services? Where are they waiting?
10. How can I best support the children, Ready, Set, Smile staff, and school/early education professionals?

Miscellaneous Gaps in Learning

1. What does this statement mean from the RSS 2020-2021 Annual Report: "121 teeth were diagnosed as having arrested decay from previous SDF treatment"?
2. What are the administrative related costs that Ready, Set, Smile must pay?
3. What goes into spending for clinics versus spending for education?
4. What does it mean to have teeth arrested?
5. What do the following abbreviations mean: ITR, NESS?

Part 3: Informational Interviews

Priority #1: Ensure education meets the needs of families and they will want to attend oral health education in the future.

1. Ann Copeland, Ready, Set, Smile Operations Director & Dr. Adele Della Torre, Ready, Set, Smile Founder & Executive Director

Ann is Ready, Set, Smile's Operations Director and her main responsibilities are to ensure that program implementation is running smoothly, that staff have necessary oral health supplies, and they are well-informed and trained. Ann takes direction from Dr. Adele, Executive Director, and she ultimately ensures that Ready, Set, Smile is operating in accordance with the regulations of the Board of Directors, HIPPA regulations, and all reports are completed in a timely manner. As essential members of the Ready, Set, Smile team, they noted current recruitment of family members includes providing incentives for families to participate in the education programs because most families experience many barriers that take priority over oral health, including transportation, paying for necessities, and finding a place to live. The goal of Ready, Set, Smile is to ensure a balance in collaborating with families in a way that acknowledges what they are doing well with providing education on how best to care for children's oral health.

Ready, Set, Smile has found that recruiting families and connecting with them is easier within early education programs as opposed to schools because of the readiness to learn and increased interaction between day care providers and caregivers when compared to schools. Ready, Set, Smile has noted that transportation is the primary barrier in increasing family participation in the education nights. Major supports to overcoming this barrier include connecting with a familiar point of contact, like community health workers who are essential liaisons to connecting with families and building rapport with them. Ready, Set, Smile is still working through incorporating telecommunication within family education and check-ins because they experienced COVID barriers within schools. In fact, they were not allowed to

provide education to families (only clinic services) due to COVID regulations this past year.

Within the next few months, Ready, Set, Smile aims to reach out to families and collaborate with them to best meet their needs, whether that is for diet, habits/routines, and/or accessing oral health materials. Both Ann and Dr. Adele's goals for the upcoming year are to (1) establish a routine and rhythm in program implementation, (2) increase family motivation and education, (3) partner with schools for additional support, and (4) instill hope for the families they serve.

2. Mai Xiong, Ready, Set, Smile Lead Community Health Worker (CHW) and Clinic Manager

Mai is a lead community health worker and clinic manager who has been working for Ready, Set, Smile for the past 5 years. Her main responsibilities are to contact volunteer dentists/providers and scheduling them into upcoming clinics. She ensures clinics are properly staffed and sets up clinics with schools, coordinates equipment pick up/drop off, and trains staff on their responsibilities. She enjoys the fast-paced clinic environment and helping kids with their oral health. She noted that on office days, connecting with families can be a major barrier due to outdated contact information. Additional barriers to connecting with families include language and caregivers forgetting they signed up for Ready, Set, Smile services during enrollment.

Mai identified multiple supports and opportunities for growth. Major supports include the required Family Partnership North education nights and having caregivers attend mandatory oral health education nights. Additionally, opportunities to increase family engagement and oral health education would be to partner with day cares and schools in providing translated video messages, newsletters, and/or texts from the principal in educating them about the importance of oral health, how to care for their teeth, and opportunities for partnering with Ready, Set, Smile for additional services. She stated that the first step toward overcoming multiple barriers is to first gain the trust of caregivers, and school professionals can be an excellent interprofessional team member in addressing oral health with children. Each partnership site will have their own challenges; however, in providing a unique approach to oral health care and education, Ready,

Set, Smile will be able to better meet the oral health needs of the children and families they serve.

Summary of Interview Guide

- **Length of interview:** 30-minute interview with Ann & Dr. Adele; 21-minute interview with Mai
- **Interview format:** Virtual – Google Meet and Zoom
- **Date/time for interview:** 4/27/22 at 11:00 am with Ann & Dr. Adele; 4/29/22 at 12:30 pm with Mai
- **Purpose:** The purpose of these interviews is to understand the strengths and areas of improvement for supporting Ready, Set, Smile in increasing family engagement. As key members of the Ready, Set, Smile team, Ann, Dr. Adele, and Mai's professional experiences will help inform the initial steps toward increasing family engagement among partnership sites.

Interview Questions

Building Rapport

1. Can you tell me more about your role(s) and responsibilities at Ready, Set, Smile?
2. What do you enjoy about your role?
3. What is the most challenging part of your responsibilities?

Family Engagement

1. What are the current methods in recruiting families to participate in education presentations?
2. How do these methods vary by site?
3. What do you see as major supports to family engagement and/or connecting with families? How about any barriers?
4. Have there been any changes to the amount of family engagement over the past 2 years?
5. What have you done in the past to increase family engagement in education activities? What has worked well? Any strategies that were more challenging?

Closing

1. What are your goals for increasing family engagement in the next 3 months?
2. What are you looking forward to in the next year?

Part 4: Public Records and Organizational/Community Resources

Internal Records

1. Ready, Set, Smile 2020-2021 Annual Report

Description

Two-page summary of the past year's highlights, children served compared to previous years, expenditures, and areas of growth.

Summary

Ready, Set, Smile has received funding from various sources, donors, and school sponsorships in order to expand their services to more children and their families. 48% of revenue occurs from individual donations, and 48% of organizational costs are administrative related. Ready, Set, Smile administered fluoride varnish/silver diamine fluoride applications to prevent dental caries to 415 total children. The number of students served in 2020-2021 dropped from 1,705 (2018-2019) to 415 (2020-2021) due to the shutdown in March 2020. Ready, Set, Smile shifted their approach and provided portable dental care services, as well as telehealth services to educate families about oral health. Overall, key findings from the past year indicated that 38% of children treated were uninsured, 42% of the children seen had active decay, and "the pandemic uncovered many racial inequities in our healthcare system" (Ready, Set, Smile, n.d.a, p. 2).

(Ready, Set, Smile, n.d.a)

2. Ready, Set, Smile Oral Health Data Forms – 2020

Description

Research data conducted in 2019-2020 during COVID-19 pandemic disseminating oral health education materials to families along with family feedback. Data forms assessed included Feedback Follow Up Calls and Texts and the Early Childhood Caries Excel sheet.

Summary

According to the Early Childhood Caries Excel sheet, 83 total children were screened at 12 different early education sites and had active decay. Families were contacted by Ready, Set, Smile staff and occupational therapy students and faculty to connect families to continued oral health care services. Among the 83 total children identified as at risk, there were 337 total caries detected in the initial screen with each child having anywhere between 1 and 12 active caries. The most frequent amount of active caries per child was one (16), two (16), and four (17). Atraumatic treatment was provided for 20 children using sealants, silver diamine fluoride (SDF), and/or interim therapeutic restoration (ITR) placed on 45 total teeth. Six total children had improvements identified on the data sheet with 17 total caries arrested after follow-up from treatment. Common patterns within the comments section filled out by Ready, Set, Smile staff indicated there were multiple barriers to reach families including children and families moving to another location (8), no consent forms from caregivers for children to receive services (5), inaccurate contact information (4), and Ready, Set, Smile system errors (6). It should be noted that 4 out of 83 children receiving oral health care services required more advanced treatment due to urgent oral health care needs and pain.

According to the Feedback from Follow-Up Calls and Texts, 12 out of 83 families contacted provided feedback for the oral health mailing packets that included oral health materials and education-based activities. Nine out of 12 families indicated the oral health materials and/or activities were useful. However, 3 out of 12 families indicated the oral health activities were not useful because they lacked age-appropriateness for their child(ren). Families indicated that time (3) and scheduling barriers (3) influenced their ability to access and utilize oral health materials and dental care services. Multiple caregivers voiced concern for their children's lack of oral health care. It should be noted that the most frequent mode of communication with families were text responses (4) and phone responses (4). One family

responded via email. However, 3 out of 12 family responses did not have a mode of communication included on the data sheet which could impact interpretation of results. (de Sam Lazaro, 2020)

External Record:

Center of Disease Control (CDC), Basics of Oral Health

Description

Center of Disease Control (CDC) provides data regarding disparities in oral health by age and race, data tools assessing oral health, and evidence-based strategies to reduce oral health disparities within communities.

Summary

Oral health disparities disproportionately impact communities of color and communities of low socioeconomic status. These disparities exist due to barriers in accessing and utilizing dental care including, cost of services, uninsured or underinsured health care, time, lack of transportation, and availability of services. According to the CDC (2015), dental care costs are more unaffordable than other types of health care. Consequences of oral health disparities include untreated oral disease leading to school absences, poor work productivity, poor quality of life, and in severe cases, death. School sealant programs and community water fluoridation are two community-based strategies aimed to reduce oral health disparities among at risk populations.

(CDC, 2021)

Part 5: Organization or Community Assets

Priority #1: Ensure education meets the needs of families and they will want to attend oral health education in the future.

Ready, Set, Smile, Community-based Organization

Description

Ready, Set, Smile is a nonprofit organization that provides oral health care and education services to children and families within multiple early education programs and school sites across the Twin Cities (Ready, Set, Smile, n.d.b,c).

Summary

Ready, Set, Smile has multiple strengths and assets working in their favor in order to better serve and educate children and families. Below are all of the strengths of Ready, Set, Smile that helps them increase family engagement in the education programs.

- Existing partnerships with early education programs and school sites.
- Delivery of services within the child's natural environments (early education and schools).
- Team of experienced dental health care professionals, both employed through Ready, Set, Smile and volunteers.
- Sponsorship methods to increase quality of care and ongoing services including school sponsorships, philanthropic donations, and annual donations from partnered Twin Cities dentists.
- Partnerships with surrounding universities to collaborate with occupational therapy, public health, nutrition, and dental health students and faculty to expand the dental workforce and provide continued improvement to increase family engagement.

- Alignment with current best practices for reaching children and families living within low socioeconomic regions, including expanding the dental workforce, providing oral health care services in the families area, empowering families through education, and preventing oral health diseases through community-based methods (i.e. SDF, advocating for water fluoridation, atraumatic oral health care services, etc.).

Family Partnership, Early Education Program

Description

Family Partnership is an existing partner early education site with Ready, Set, Smile (Ready, Set, Smile, n.d.f).

Summary

Family Partnership has a positive history and relationship with Ready, Set, Smile and requires all caregivers to attend mandatory education programs (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022). Therefore, there is a good turnout to the family education nights at the Family Partnership (A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022).

Part 6: Proposed Methods to Collect Other Information During the Doctoral Capstone Experiences and Project

Internal Information and Resources

| Name of Information or Resource | Description of Information or Resource | Brief Summary of Focus of Learning |
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| <p>Dr. Adele Della Torre</p> <p>(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)</p> | <p>Ready, Set, Smile Co-founder and practicing dentist.</p> | <p>Overall progress for Ready, Set, Smile partnerships, funding, and focus for serving children and families.</p> |
| <p>Ann Copeland</p> <p>(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)</p> | <p>Ready, Set, Smile Operations Director and primary mentor.</p> | <p>Progress and focus for education programs with children and families partnered with early education programs.</p> |
| <p>Mai Xiong</p> | <p>Ready, Set, Smile Lead Community Health Worker.</p> | <p>Supports and barriers to connecting with families, educating children and families, and child needs.</p> |
| <p>Dr. de Sam Lazaro</p> <p>(A. Torre, A. Copeland, R. McPherson, S. de Sam Lazaro, personal communication, April 8, 2022)</p> | <p>Ready, Set, Smile Primary Investigator, capstone mentor, and St. Catherine University Program Director.</p> | <p>Consultation regarding OT lens in educating children and families, as well as Ready, Set, Smile staff. Key learnings and areas of growth from interprofessional partnerships.</p> |
| <p>Caregiver Focus Groups</p> | <p>Focus groups with caregivers from the Family Partnership and the Jeremiah Program.</p> | <p>Significant patterns and caregiver responses related to oral health attitudes, oral health knowledge, oral health behaviors, and supports and barriers to access and utilize oral health resources and hygiene materials.</p> |

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| <p>Caregiver Survey Results</p> <p>(de Sam Lazaro, 2022)</p> | <p>Survey results from MAOT students interviewing caregivers from the Family Partnership - North.</p> | <p>Caregiver survey results disseminated by MAOT students will inform the effectiveness of the family education program on caregiver improvements in oral health knowledge and behaviors.</p> |
| <p>MAOT Sensory Processing Presentation & follow-up meeting</p> | <p>Presentation led by St. Kate's MAOT students to the Ready, Set, Smile team and interprofessionals about sensory factors that influence oral health experience.</p> | <p>Focus on key findings and recommendations for Ready, Set, Smile and capstone areas of focus moving forward.</p> |
| <p>Child Check-ins or Focus Groups</p> | <p>Feedback from children enrolled in early education programs.</p> | <p>Ongoing check-ins with children enrolled with early education programs will inform the interprofessional dental care team on how best to educate them about oral health, as well as acknowledging their feelings, reduce their anxiety, and address any sensory processing needs.</p> |
| <p>Ready, Set, Smile staff meetings and interviews</p> | <p>Weekly meetings with Ready, Set, Smile staff and interviews with Ann Copeland and Mai Xiong.</p> | <p>Overall focus of the week, strengths, and service/education need areas for best serving children and families, as well as the specific needs of Ready, Set, Smile.</p> |
| <p>Ready, Set, Smile Website Updates</p> | <p>Events calendar and monthly news updates located on the Ready, Set, Smile website.</p> | <p>Upcoming education events with early education programs and school sites. Updated news information about progress in funding, philanthropic donations, and areas of need for working with at risk populations.</p> |

External Information

| Name of Information or Resource | Description of Information or Resource | Brief Summary of Focus of Learning |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>MN Department of Health</u> <u>Oral Health Plan</u></p> | <p>The MN Department of Health outlines the state's initiative to address oral health across the state.</p> | <p>Focus on current best practices and action strategies for Focus Areas: (1) Oral Health Infrastructure, (2) Access to Oral Health, (3) Health Systems Integration, and (4) Inclusion. Read the focus for future directions.</p> |
| <p><u>MN Department of Health: Oral Health</u></p> | <p>The MN Department of Health provides an overview of the state's progress, oral health resources, and MN oral health data, and programs and initiatives provided across the state.</p> | <p>Focus on oral health data, programs and initiatives, and oral health educational resources.</p> |
| <p><u>CDC Basics of Oral Health</u> (CDC, 2021)</p> | <p>Center of Disease Control provides data regarding disparities in oral health by age and race, data tools assessing oral health, and evidence-based strategies to reduce oral health disparities within communities.</p> | <p>Focus on ongoing nationwide initiatives to address oral health disparities, as well as research articles for education children and families about oral health.</p> |
| <p><u>Healthy People 2030</u> (Healthy People 2030, n.d.)</p> | <p>Healthy People 2030 provides nationwide objectives to improving oral health populations along with current progress towards meeting these objectives; detailed information about oral conditions, health policy, healthcare access and quality, and preventive care; and evidence-based resources for addressing oral health with communities.</p> | <p>Focus on current progress nationwide and compare this with Minnesota Department of Health initiatives. Identify evidence-based oral health resources that would be beneficial to utilize with Ready, Set, Smile.</p> |
| <p>Scoping Review (McPherson & Oldenburg, 2021)</p> | <p>The scoping review I wrote in the Scoping Review course focuses on gaining a breadth and depth of knowledge for understanding the contextual supports and barriers to oral health services and hygiene practices for families of low socioeconomic status (SES)?</p> | <p>Focus on the education-based articles and evidence-based strategies for educating children and families within low socioeconomic areas.</p> |

Part 7: SWOC Analysis: Strengths, Weaknesses, Opportunities, and Threats

| Internal | | External | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strengths | Weaknesses | Opportunities | Challenges |
| Diverse dental care team and professionals | Small interprofessional team of volunteer dentists, dental therapists, community health workers, and operations staff to serve 26 total partnership sites. | Opportunities to partner with additional existing community-based oral health care teams. | Hiring additional team members. Community health workers are opting to work in hospitals due to increased pay. |
| Open-minded and compassionate dental care team | Ready, Set, Smile staff work at other organizations (can also be seen as a strength for networking). | Opportunities to partner with additional early education programs and school sites. | Communication challenges with partnership sites and to adapt the culture of the school to support oral health. |
| Partnerships with St. Catherine University and the University of Minnesota students and faculty (dental therapists, occupational therapy, public health, and nutrition) | Low family turnout to family education nights for most partnership sites | The Family Partnership requires families to attend education nights. | Most families voluntarily participate in family education nights. Obstacles for scheduling these education nights that meet the scheduling needs of families. |
| Partnerships with various early education programs and school sites within the Twin Cities. | Most of the funding Ready, Set, Smile receives relies on philanthropic/individual donations. | MN grant opportunities, Delta Dental Grant, and donation funding opportunities | Schools and early education programs each have their own culture, values, and procedures that Ready, Set, Smile has to adapt to. |
| High family turnout for family education nights at The Family Partnership. | Education methods require evaluation of effectiveness and alignment with current best practices in educating populations of various health | Sponsor a School donations | Under coverage or lack of dental care insurance coverage for families. |

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| | literacy and cultural diversity. | | |
| Dental care and education provided in the child's natural environment (daycare/school). | | Telehealth communication | Dental care/Medicaid reimbursement rates. |
| Partnerships with practicing dentists for funding. | | Ready, Set, Smile Board Member nonprofit rules and regulations | Ready, Set, Smile Board Member nonprofit rules and regulations |
| Oral health education curriculum by age/grade. | | Schools (St. Paul) that provide translation services for families. | Partnership site education regulations due to COVID pandemic. |
| Oral health training modules for Ready, Set, Smile staff and made public for additional professionals to educate and expand the dental workforce. | | | |
| Ready, Set, Smile's current oral health delivery methods align with current best practices to improve access of oral healthcare to at risk populations. | | | |

Summary

Ready, Set, Smile has many internal strengths in order to serve and educate children and families. They are a team of well-informed, compassionate, and knowledgeable professionals who deliver both oral health and education to children and families. They have a strong relationship with multiple partnership sites, including the Family Partnership, which requires families to attend the education classes. Additionally, Ready, Set, Smile has partnered

with the community, including local dentists, St. Catherine University and the University of Minnesota students and faculty to improve their delivery of services, as well as expand the dental workforce so they can best meet the needs of families across multiple sites.

However, there are multiple barriers to meeting the education needs of the families they serve, including (but not limited to): voluntary education classes, a smaller interprofessional team, and reliance on philanthropic donations for the majority of their funding. Additional external challenges include hiring more community health workers and adapting to the culture and practices of each partnership site. Opportunities to overcome these challenges include partnering with additional community health services/programs, pursuing mandatory education nights within the partnership site, as well as utilizing telehealth service delivery to frequently check in with families.

Part 8: Preliminary Evidence Review on Populations, Interventions, and Programs of the Organization/Community

1. Initial Appraisal: Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership.

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| | Overview of Article |
| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Single cohort study |
| APA Reference | Biordi, D.L., Heitzer, M., Mundy, E., DiMarco, M., Thacker, S., Taylor, E., Huff, M, Marino, D., & Fitzgerald, K. (2015). Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership. <i>American Journal of Public Health, 105</i> (5, Suppl. 2), 23 - 29. https://doi.org/10.2105/AJPH.2014.302486 |
| Abstract | “Objectives. We provided oral health care services at 2 sites using a nurse practitioner–dietitian team to increase dental workforce capacity and improve access to care for low-income preschool children. Methods. Our team provided oral health assessments and education, fluoride varnish application, and dentist referrals. The primary endpoint was participants’ access to oral health care. Secondary endpoints included increasing the practice scope of registered dietitians through training programs for oral health assessment and the application of fluoride varnishes for children. The oral health and hygiene and dietary habits of the participants were also determined. Results. From 2010 to 2013, 4360 children received fluoride varnishes in 7195 total visits. Although the proportion of children with dental caries at the first visit was greater at the urban site, both sites were similar by visits 2 and 3. The number of caries declined with increased program visits, which coincided with an increase in the proportion of participants visiting a dentist. Conclusions. Progress toward eliminating dental health disparities requires addressing barriers to dental care access. We showed that expanding access to oral health services through nurse practitioner–dietitian cooperation improved access to preventive fluoride varnishing use in low-income children” (p. 23). |
| Author | Credentials: RN, PhD, MSN Position and Institution: School of Nursing, University of Akron Publication History in Peer-Reviewed Journals: Moderate. |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: American Journal of Public Health Other: Official journal of the American Public Health Association |
| Date and Citation History | Date of publication: 2015 Cited By: 51 |
| Stated Purpose or Research Question | “To increase access to oral health care in vulnerable children from birth to 5 years, we examined the feasibility of linking children’s oral health care services with care at 2 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program sites (1 rural and 1 urban site)” (pp. e23-24). |
| Author’s Conclusion | “Barriers to access remain a significant impediment toward eliminating dental health disparities in low-income children. Our project demonstrated that a nurse practitioner–dietitian delegated work model at WIC sites increased dental workforce capacity by |

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| | <p>providing access for preventive oral health services, including topical fluoride application, to low-income children, and oral health education and dietary counseling to their parents or guardians. It also suggested that WIC sites could become excellent clinical training sites for nursing, dietetic, dental, and medical education in selected oral health care services” (p. e28).</p> |
| <p>Overall Relevance to your Doctoral Capstone Project</p> | <p>Overall Relevance of Article: Good Rationale: This study relates directly to the population of low-income children, oral health outcomes of oral health literacy and hygiene habits, and an education-based program to educate low-income mothers.</p> |
| <p>Overall Quality of Article</p> | <p>Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years.</p> |
| <p>Your Focused Question and Clinical Bottom Line</p> | <p>Question: What is the effectiveness of providing oral health preventive services in improving the access and oral health behaviors of low-income families partnered with Women, Infant and Children (WIC) programs? Clinical Bottom Line: Allied health professionals can improve the oral health literacy, outcomes, and behaviors of low-income families through community-based, educational, and preventive programs.</p> |
| <p>Your Lay Summary</p> | <p>Women, Infants, and Children (WIC) sites support the nutrition, financial, and health needs of children and guardians. Nutrition and oral health impact a child’s health, speech, education, and development. Nutrition and dental services can improve the oral health of children. Dentists have partnered with WIC staff to improve the oral health of children. A study done in 2015 revealed the benefits of WIC staff providing oral health services to children enrolled in their program. These benefits included convenience in nutrition and oral health services provided during single visits. There was also a reduction in cavities in children after they received multiple fluoride varnish applications. WIC staff can provide a fluoride varnish, which is a sealer that helps protect the teeth from decay. They can also educate guardians about diet, drinks, and hygiene habits that best protect the teeth from cavities. Cost, transportation, and fear of the dentist can be barriers to receiving care. The local dentist and WIC partners can provide oral health services for children.</p> |
| <p>Your Professional Summary</p> | <p>This single cohort study evaluated the effectiveness of an interdisciplinary oral health preventive program in increasing access to dental care for children enrolled in rural and urban Women, Infant, and Children (WIC) sites. Authors used a workforce expansion model to guide service delivery of fluoride varnish application, oral health education, and oral health assessments. Services were provided to 4360 children ages birth to five years throughout 7195 total visits during families’ 3 and 6-month follow-up appointments. Children received fluoride varnish at each visit. Guardians received oral health education and participated in an oral health survey regarding oral hygiene, dietary practices, and dentist visits. Measures were used to analyze changes in oral health status and habits throughout five visits.</p> <p>Urban site children experienced a significantly greater presence of dental caries than the rural site at visit one. By visits 2 and 3, there was no significant difference in the presence of dental caries between sites. There was a significant increase in the proportion of participants who visited the dentist and an increase in daily toothbrushing from visit one to visit three. Strengths of this study included a well-supported rationale</p> |

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| | <p>for the use of WIC sites in delivering preventive oral health services and the comparison of outcomes from two different contexts. Limitations included the lack of randomization of the sample. No explanation was provided for choosing the specific WIC sites or why only two WIC sites were evaluated. Authors also identified an unexplained drop in the number of children over time. Implications of this study identify a need for future studies to evaluate cost-benefits of long-term workforce expansion in addressing oral health with low-income families enrolled in community and government supported programs.</p> |
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2. Initial Appraisal: Effectiveness of the school-based oral health promotion programmes from preschool to high school: A systematic review

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| | Overview of Article |
| Type of article | Overall Type: Review of Research Study Specific Type: Systematic Review |
| APA Reference | Bramantoro T, Santoso CMA, Hariyani N, Setyowati D, Zulfiana AA, Nor NAM, et al. (2021). Effectiveness of the school-based oral health promotion programmes from preschool to high school: A systematic review. <i>PLoS ONE</i> , 16(8): e0256007. https://doi.org/10.1371/journal.pone.0256007 |
| Abstract | <p>“Background: Schools offer an opportunity for oral health promotion in children and adolescents. The purpose of this study was to conduct a systematic review of the influence of school-based oral health promotion programmes on oral health knowledge (OHK), behaviours (OHB), attitude (OHA), status (OHS), and quality of life (OHRQoL) of children and adolescents. Methods: A systematic search on the PubMed and Embase databases was conducted to identify eligible studies. The last search was done on April 24th, 2020. The quality of the included studies was evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal tools. Results: Of the 997 articles identified, 31 articles were included in this review. Seven studies targeted students in preschools, seventeen in elementary schools, and seven in high schools. Most of these studies revealed positive outcomes. Some studies showed that the school-based oral health promotion programmes showed better OHK, OHB, OHS, and OHRQoL. Conclusion: Positive results were obtained through oral health promotion programmes in schools, especially those involving children, teachers, and parents” (p. 1)</p> |
| Author | <p>Credentials: N/A Position and Institution: Department of Dental Public Health, Faculty of Dental Medicine, Universitas Airlangga, Surabaya, Indonesia Publication History in Peer-Reviewed Journals: Extensive</p> |
| Publication | <p>Type of publication: Scholarly peer-reviewed journal Publisher: PLoS One Other: N/A</p> |
| Date and Citation History | <p>Date of publication: 2021 Cited By: 2</p> |
| Stated Purpose or Research Question | <p>“The objective of this study was to systematically review the effectiveness of the school-based oral health promotion programmes on oral health knowledge (OHK), behaviours (OHB), attitude (OHA), status (OHS), and quality of life (OHRQoL) of children and adolescents at preschools, elementary schools, and high schools” (p. 2).</p> |
| Author’s Conclusion | <p>“In summary, most studies found that the intervention programmes brought positive outcomes, especially those involving OHE for children, teachers, and parents, supervised toothbrushing, and provision of fluoride toothpaste and toothbrush. The role of repetition and reinforcement in OHE is highlighted, which is possible through continuous programmes. It may also be beneficial to deliver OHE to preschoolers through fun activities. Besides the teacher, parental involvement plays a role in</p> |

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| | determining the success of the programmes, which may indicate the need to conduct oral health training for them. Future studies that assess the efficacy of home-based oral health promotion programs among children and adolescents will be useful to provide more evidence in developing integrated oral health promotion programmes” (p. 11). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Good Rationale: This systematic review relates directly to the population of early age and school age children in evaluating school oral health education programs on their oral health knowledge, behaviors, and quality of life. Additionally, studies identified in this systematic review incorporated repetitive education methods, school professionals, and caregivers to improve oral health outcomes for children. |
| Overall Quality of Article | Overall Quality of Article: Good Rationale: Systematic review. Reputable journal and publisher. Published within the last year. |
| Your Focused Question and Clinical Bottom Line | Question: What is the impact of school-based oral health education programs on children’s oral health knowledge, attitude, behaviors, and oral health related quality of life? Clinical Bottom Line: Oral health education programs that incorporate fun activities, repetition, and teacher and caregiver involvement have a significant impact on oral health knowledge, attitudes, toothbrushing, and oral health related quality of life. Additional considerations include incorporating developmentally appropriate education methods, peer-involvement, sense of coherence (SOC) interventions, and motivation interviewing to improve oral health outcomes. |
| Your Lay Summary | School programs that address caring for one’s teeth have a positive impact on children. Specifically, they impact children’s attitudes, behaviors, and quality of life. Studies have looked at a variety of education methods and services on children’s oral health. Oral health outcomes were assessed for preschoolers, elementary students, and high school students. Overall, school programs that provide both education and oral health services have a positive impact. Additionally, teacher and parent involvement are essential for behaviors that impact children’s teeth. Examples include diet, toothbrushing, and tobacco use. Specific education methods should be developmentally appropriate. They should also include active involvement for children, especially for younger aged students. Children can learn positive behaviors from their teachers, parents, dental professionals, and their peers. The more children learn about oral health, the more likely they are to develop and maintain positive behaviors as they age. |
| Your Professional Summary | The purpose of this systematic review was to evaluate the effectiveness of school-based oral health programs on oral health knowledge, behaviors, attitudes, status, and oral health related quality of life (OHRQoL). Authors utilized Joanna Briggs Institute (JBI) Critical Appraisal tools to guide the systematic review. Randomized control trials and quasi-experimental designs from countries around the world dated from 1979-2019 were included. Key word searches included phrases related to oral health education, children, toothaches, caries, oral health knowledge, attitudes, behaviors, and OHRQoL. 31 out of 997 studies were included in this review. |

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| | <p>School-based oral health education programs have a positive impact on all oral health outcomes (stated above). Essential components of oral health education programs incorporate repetition of a variety of education methods that require active involvement from children and are developmentally appropriate. Additionally, teacher and caregiver involvement significantly impact oral health outcomes for children. Strengths of this study include a variety of school-based oral health programs conducted across the world that targeted children from preschool age to adolescence. Limitations of this study indicate difficulty in quantitatively comparing studies due to program variability. Although, the variety of cultures included is a strength, it is also a limitation in being able to compare due to the variability of socioeconomic and legislative differences between countries. Implications of this study identify the use of school-based oral health programs that include both education and direct care, as well as teacher and caregiver involvement.</p> |
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3. Initial Appraisal: Caregivers' comprehension of the terms decay and cavities: A qualitative analysis

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| | Overview of Article |
| Type of article | Overall Type: Qualitative Study Specific Type: Grounded theory (inductive) |
| APA Reference | Claiborne, D. M., Shuman, D., Sullivan, M., & Richman, J. (2021). Caregivers' Comprehension of the Terms Decay and Cavities: A qualitative analysis. <i>Journal of Dental Hygiene</i> , 95(6), 6–12. |
| Abstract | <p>“Purpose: Tooth decay and cavities are the most common oral health consequences for young children that may result from inadequate oral health literacy (OHL) or understanding of their caregivers. The purpose of this study was to describe the understanding of terms related to decay and cavities among caregivers of preschool-aged children. Methods: English-speaking caregivers with children aged <6 years were recruited from two private dental practices located in Washington State. A qualitative analysis was performed using responses regarding the terms decay and cavities as part of the 36 item Oral Health Literacy Inventory for Parents (OH-LIP). Responses were recorded, transcribed, coded, and assigned to domains and categories. Results: Responses from 111 participants were included in the analysis. About one fifth of the participants (19.8%, n=22) indicated that they did not know what decay was or provided an incorrect response. The majority (71.2%, n=79) made the association that decay was something bad that happens to the teeth. However only a minority of the participants (9%, n=10) correctly identified decay as destruction of the tooth surface because of bacterial action. When asked to define the word cavities, more than half (68.5%) indicated that cavities were something harmful to teeth, while only about one quarter (27%,n=30) correctly identified cavities as resulting from the decay process. Conclusions: Knowledge disparities related to the terms decay and cavities among caregivers suggest that more education is needed regarding the tooth decay process and factors causing dental caries to ensure timely preventive services are received. Gaps in oral health literacy should be addressed by health care professionals. Dental hygienists are in an ideal position to educate caregivers as well as non-dental health care professionals who provide services to caregivers and children” (p. 6).</p> |
| Author | <p>Credentials: PhD, MS, RDH Position and Institution: Assistant professor and the Graduate Program Director, Gene W. Hirschfeld School of Dental Hygiene, College of Health Sciences, Old Dominion University, Norfolk, VA, USA Publication History in Peer-Reviewed Journals: Extensive</p> |
| Publication | <p>Type of publication: Scholarly, peer-reviewed journal Publisher: The Journal of Dental Hygiene Other: American Dental Hygiene's Association (ADHA)</p> |
| Date and Citation History | <p>Date of publication: 2021 Cited By: 0</p> |

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| Stated Purpose or Research Question | “The purpose of this study was to answer the question, “What are caregivers’ comprehension and understanding of the terms decay and cavities related to children’s oral health?” through the qualitative analysis of caregivers’ responses on the OHLIP inventory” (p. 7). |
| Author’s Conclusion | “There are disparities in caregivers’ understanding and comprehension of the common oral health terms “decay” and “cavities.” While caregivers may be able to recognize causes and how to reduce the risk of decay and cavities, understanding of the process is inadequate. All health care providers, including dental hygienists and dentists, who provide care to mothers, caregivers and children play an essential role to ensure that the messaging of the dental caries process is understood. Assessing understanding can be easily integrated by asking caregivers open-ended questions regarding the content discussed during the visit. Limiting the amount of content presented at each care appointment may also be helpful to ensure better comprehension. Future studies may consider focusing on the role of these oral health literacy interventions on pediatric oral health outcomes over time” (p. 11). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Moderate Rationale: This qualitative study relates to the doctoral capstone project in understanding implications for educating caregivers about decay and caries in a way that incorporates practices for improving understanding and implications for oral health literacy interventions. |
| Overall Quality of Article | Overall Quality of Article: Moderate Rationale: Qualitative study. Reputable journal and publisher. Published within the last year. |
| Your Focused Question and Clinical Bottom Line | Question: What are caregivers’ understanding of decay and cavities? Clinical Bottom Line: Caregivers misunderstand the terms and interconnectedness of “decay” and “cavities.” Basic understanding is an essential first step toward healthy behaviors, yet it must extend beyond basic understanding and incorporate oral health strategies that relate to the families’ specific habits, routines, and priorities. |
| Your Lay Summary | Previous studies have shown the impact of caregiver knowledge on children’s oral health. Health professionals can gather data about caregiver knowledge using inventories or questionnaires. An example of an inventory used in research is the Oral Health Literacy Inventory for Parents (OH-LIP). This inventory is used to evaluate caregiver knowledge about oral health concepts. In research, most caregivers studied cannot accurately identify the term “decay.” And, most cannot accurately explain how “decay” relates to “cavities.” Health professionals can use the OH-LIP to teach caregivers how they impact children’s oral health. Health professionals should expand on baseline data. They can provide family-specific strategies families can implement into their daily lives. Additional strategies can help families use positive oral health behaviors in their family’s daily routines. Examples of these include open-ended questions and providing limited essential information within education. |

**Your
Professional
Summary**

This qualitative research study evaluated caregiver understanding of the terms “decay” and “cavities” using Part III of the Oral Health Literacy Inventory for Parents (OH-LIP). In 2012, 114 caregivers of children less than 6 years of age were recruited for this study from two private dental clinics in Washington State. 111 caregiver responses were analyzed for this study. Of the 111 caregivers, 94% were female, 76% were Caucasian, 97% non-Hispanic or Latino, and 55% were 26-35 years of age with high school (28%) or college (30%) completion. Three total investigators used an inductive approach to create, code, and summarize themes for caregiver responses. Three primary themes emerged from the responses: **Decay** - (1) Do not know, (2), Teeth going bad, and (3) A disease on the tooth; **Cavities** – (1) Do not know or incorrect response, (2) Something that harms the teeth, and (3) A cavity is the result of decay (p. 8-9)., 71% of caregiver responses identified decay as “Teeth going bad.” 9% correctly identified decay (theme 3). 68% identified cavities as “Something that harms the teeth”. 27% correctly defined “A cavity is the result of decay.”

Strengths of this study include the large sample size, use of the OH-LIP to provide structured questions, and the use of an inductive approach with 3 total investigators. Limitations of this study include the lack of cultural diversity and use of two private dental clinics to recruit caregiver participants. The use of the OH-LIP may have influenced caregiver responses. Implications of this study include using education as baseline data to educate caregivers. Education should also incorporate oral health literacy standards, limited essential information, and family-specific strategies to encourage positive oral health behaviors.

4. Initial Appraisal: The effectiveness of behaviour change interventions delivered by non-dental health workers in promoting children’s oral health: A systematic review and meta-analysis

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| | Overview of Article |
| Type of article | Overall Type: Review of Research Study Specific Type: A systematic review and meta-analysis |
| APA Reference | Faisal MR, Mishu MP, Jahangir F, Younes S, Dogar O, Siddiqi K, et al. (2022) The effectiveness of behaviour change interventions delivered by non-dental health workers in promoting children’s oral health: A systematic review and meta-analysis. <i>PLoS ONE</i> 17(1): e0262118. https://doi.org/10.1371/journal.pone.0262118 |
| Abstract | <p>“Objectives: Dental caries is the most common preventable childhood condition. Non-dental professionals and health workers are often well placed to support parents in adopting positive oral health behaviours for their children. The aim of this study was to determine the effectiveness of behaviour change interventions and their individual component behaviour change techniques (BCTs), that were delivered by non-dental professionals and health workers. Methods: A systematic search of Ovid MEDLINE, PubMed, CINAHL, Cochrane Library, Web of Science, TRoPHI and PROQUEST from inception until March 2021 was conducted. Randomised controlled trials and quasi-experimental studies for improving oral health outcomes in children were included. Quality assessment was carried out using Cochrane Risk of Bias tool and ROBINS-I tool. Publication bias was assessed using funnel plots and Egger's regression intercept. Effect sizes were estimated as standardised mean difference (SMD) and odds ratio/risk ratio for proportions. Meta-analyses were performed for studies reporting mean decayed, missing, filled surfaces (dmfs) and mean decayed, missing, filled, teeth (dmft) indices. Behaviour change technique coding was performed using behaviour change technique taxonomy v1 (BCTTv1). Results: Out of the 9,101 records retrieved, 36 studies were included with 28 showing a significant effect either in clinical and/or behavioural/knowledge outcomes. Most studies (n = 21) were of poor methodological quality. The pooled SMD for caries experience showed statistically significant result for caries prevention at surface level -0.15 (95% CI -0.25, -0.04) and at the tooth level -0.24 (95% CI -0.42, -0.07). In 28 effective interventions, 27 individual BCTs were identified and the most frequently used were: "Instructions on how to perform the behaviour" and "Information about health consequences". Conclusion: There is low quality of evidence suggesting non-dental professionals and health workers may help improve oral health outcomes for children. To confirm these findings, further high-quality studies incorporating a variety of BCTs in their interventions for adoption of good oral health behaviours are needed” (p. 1)</p> |
| Author | Credentials: Ph.D., BDS, MDPH Position and Institution: Department of Health Sciences, University of York, York, United Kingdom Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Scholarly, peer-reviewed journals Publisher: PLoS One Other: N/A |

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| Date and Citation History | Date of publication: 2022 Cited By: 0 |
| Stated Purpose or Research Question | “This review aims to: 1. Determine the effectiveness of behaviour change interventions delivered through non-dental professionals and health workers for young children’s oral health promotion 2. Identify BCTs by coding descriptions of effective interventions using the behaviour change technique taxonomy version 1(BCTTv1)” (p. 2). |
| Author’s Conclusion | “Oral health promotion and behaviour change techniques facilitated by primary care workers may help address the global burden of dental caries. The results of this review provide some evidence to support the use of non-dental health professionals and health workers in reducing caries incidence through a variety of BCTs. However, the quality of the existing studies to date is low with a high risk of bias. Future research and robust clinical trials using standardised taxonomy may improve the generalisability of these findings” (p. 11). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Good Rationale: This systematic review and meta-analysis evaluates how non-dental professionals/health workers can promote oral health for young children leading to behavior change. |
| Overall Quality of Article | Overall Quality of Article: Moderate Rationale: Systematic review and meta-analysis. Reputable journal and publisher. Published this year. However, most studies identified from this systematic review and meta-analysis had poor methodologies. |
| Your Focused Question and Clinical Bottom Line | Question: What is the effectiveness of health promotion interventions delivered by health care workers (non-dental professionals) on change in children’s oral health behaviors? Clinical Bottom Line: Non-dental health workers can use health promotion interventions to address positive oral health behavior change with children and their families. |
| Your Lay Summary | Write a one paragraph (150 – 200 words) summary of the study written at an 8-10 grade level for a client audience. This should include a statement of what you think the implications are from this study. This should be in your own words. Check your reading level using MS Word or another tool. Recommendation: Do this after you complete the rest of the critical appraisal. |
| Your Professional Summary | Write a one paragraph (200-250 words) professional summary of the study that includes the objective, design, the sample size, the strengths, weaknesses, and implications. This should be in your own words. The purpose of this systematic review and meta-analysis was to evaluate the effectiveness of oral health promotion interventions lead by non-dental professionals on children’s oral health outcomes. Recommendation: Do this after you complete the rest of the critical appraisal. |

5. Initial Appraisal: Effect combined learning on oral health self-efficacy and self-care behaviors of students: A randomized controlled trial

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| | Overview of Article |
| Type of article | Overall Type: Primary Research Study Specific Type: Randomized control trial (RCT) |
| APA Reference | Hashemi, Z. S., Khorsandi, M., Shamsi, M., & Moradzadeh, R. (2021). Effect combined learning on oral health self-efficacy and self-care behaviors of students: a randomized controlled trial. <i>BMC oral health</i> , 21(1), 342. https://doi-org.pearl.stkate.edu/10.1186/s12903-021-01693-y |
| Abstract | <p>“Background: In order to prevent oral diseases, the use of appropriate oral health education at childhood is one of the most important strategies for improving oral health knowledge and by extension positive oral health habits. Therefore, the present study aimed to evaluate the effect of animations and games as a strategy for improving oral health self-efficacy and self-care behaviors among 6-12-aged students. Methods: In this interventional study, 82 students were selected based on cluster random sampling including 38 for the case and 44 for the control group. The case group received four sessions of combined learning per week including animations and games while the control group received routine school education. The data were collected in six domains including demographics, self-care, knowledge, attitude, behavior and self-efficacy before and 5 months after the intervention using a questionnaire. SPSS version 20 was used for data analysis. Results: Five months after the intervention, the mean score of self-care, self-efficacy, behavior increased from 3.8 to 4.8, 36.8 to 48.9, and 17.07 to 18.29, respectively indicating a significant change ($p < 0.05$). However, no significant change was reported in these variables in the control group ($p > 0.05$). Conclusion: The use of animation combined with other strategies for oral health self-care education can positively influence the students' performance and self-efficacy. IRCT registration number This trial was registered at IRCT. IRCT2017042133565N1 Registration date: 2017-05-17 https://en.irct.ir/trial/25851.” (p. 1).</p> |
| Author | Credentials: Ph.D. Position and Institution: Assistant Professor, Department of Health Education and Health Promotion, School of Health, Arak University of Medical Sciences, Arak, Iran Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Scholarly peer-reviewed journal Publisher: BMC Oral Health Other: N/A |
| Date and Citation History | Date of publication: 2021 Cited By: 2 |
| Stated Purpose or Research Question | “The present study aimed to evaluate the effect of animations and games as a strategy for improving oral health self-efficacy and selfcare behaviors among 6–12-aged students” (p. 2). |

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| Author's Conclusion | <p>“Based on the results, the use of combined education methods including animation and game which were used to promote self-efficacy played a significant role in improving the oral health behaviors and self-efficacy in the students, in addition to improving their knowledge and changing their attitude towards the importance of oral health. The school environment has a great potential for educational interventions. School-based oral health programs is more effective when education is integrated with active follow-up education for controlling and monitoring behaviors. Supporting the oral health of future generations is considered as a commitment which should be shared by parents, teachers, school administrators, and all health professionals. Finally, instead of using traditional methods of educating students, it is recommended to use educational approaches in which students participate and are active. Using successful students as educators and using visual media in educational programs to make the training more effective are also recommended” (p. 7).</p> |
| Overall Relevance to your Doctoral Capstone Project | <p>Overall Relevance of Article: Good Rationale: This randomized control trial relates to education activities utilized within oral health education intervention that significantly impact school-aged childrens’ oral health behaviors, attitudes, and knowledge.</p> |
| Overall Quality of Article | <p>Overall Quality of Article: Poor Rationale: Randomized control trial. Reputable journal and publisher. Published within the last year. Weak methodology.</p> |
| Your Focused Question and Clinical Bottom Line | <p>Question: What is the effectiveness of fun activities and games on children’s oral health attitudes and oral health behaviors? Clinical Bottom Line: Oral health-related animations, activities, and games significantly increase child-reported attitudes and oral health-related behaviors.</p> |
| Your Lay Summary | <p>Games and activities can be incorporated within schools and the home environment to improve children’s independence in toothbrushing and flossing. Additionally, games can include additional topics, such as healthy eating and drinking behaviors. Teachers and health care professionals can use these methods to teach and encourage children to take care of their teeth. More research is needed to investigate how this influences child behavior. But, what we do know is that children are shaped by parent, teacher, and peer behaviors. And, they also learn from activities that are fun, motivating, and include a variety of learning methods. So, positive oral hygiene behaviors can be modeled by adults and peers, as well as made into interactive games and videos. Teachers, parents, and health care professionals can incorporate child interviews, oral health observation, and oral health screens to test the impact of these games/activities on oral health behaviors, oral health-related quality of life, and presence (or lack thereof) of cavities.</p> |
| Your Professional Summary | <p>The purpose of this randomized control trial was to evaluate the effectiveness of oral health games and activities on children’s self-efficacy and oral hygiene behaviors. Researchers used cluster sampling to select 82 primary school students selected from two girl schools and two boy schools in Iran. Four schools were randomly selected as either the case school or the control school for both the girl and boy schools. Within these schools, students were randomly selected</p> |

according to grade level resulting in 48 participants in the case group and 48 participants in the control group. 14 students were excluded from the study due to incompleteness; therefore, final analysis consisted of 38 case group students and 44 control group students. Participants in both groups completed questionnaires related to self-care, oral health knowledge, attitudes, behaviors, and self-efficacy. These were administered to students before and after the interventions. Interventions included animations, active games, and positive reinforcement from educators. Researchers reported no significant differences between groups related to age, gender, family education, and number of family members. Additionally, they reported no significant differences in child-reported self-care, self-efficacy, attitudes, behaviors, and knowledge prior to intervention. However, researchers reported significant differences between case group and control group after the game/animation intervention.

Major limitations of this study were the methodology and lack of information provided for the intervention groups and timeline. Additionally, child outcomes were self-reported and were subject to report bias. Strengths of this study included randomization of participants and use of 5-point Likert scale questionnaire. Implications of this study indicate the use of games and activities for increasing child self-efficacy and oral hygiene behavior. Future studies should re-evaluate the use of games/activities using a stronger methodology.

6. Initial Appraisal: Oral health education and promotion activities by Early Head Start programs in the United States: A systematic review.

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| | Overview of Article |
| Type of article | Overall Type: Review of Research Study Specific Type: Systematic Review |
| APA Reference | Joufi, A.I., Claiborne, D.M., & Shuman, D. (2021). Oral health education and promotion activities by Early Head Start Programs in the United States: A systematic review. <i>The Journal of Dental Hygiene</i> , 95(5), 14-21. PMID: 34654711 |
| Abstract | “Purpose: Dental caries is a non-communicable, preventable disease that disproportionately affects low-income children in the United States (US). The purpose of this systematic review was to describe oral health education and promotion activities designed to prevent early childhood caries (ECC) provided by Early Head Start (EHS) programs in the United States. Methods: Five databases were searched including CINAHL, Dentistry & Oral Sciences Source through EBSCO, PubMed, Google Scholar, and the Wiley Online Library, to identify peer-reviewed quantitative studies published in English on oral health education and promotion activities within EHS programs from 2000 to 2019. Studies were assessed for eligibility using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram (PRISMA). Two researchers independently evaluated the included studies. Results: The initial search yielded a total of 363 articles. Following the screening process, five studies met the inclusion criteria (observational, n=2; quasi-experimental, n=3). The main outcome measures included oral health knowledge, attitudes and behaviors, oral health education, oral health promotion, and oral health activities. Three studies investigated the effectiveness of oral health education and promotion interventions among EHS staff and parents. Two studies examined oral health activities such as education, toothbrushing instructions, toothpaste use, dietary education, and dental assessment. Conclusion: Studies that focused on increasing pediatric oral health knowledge and practice behaviors among both EHS staff members and parents reflected positive outcomes. Ongoing research is needed to examine the effectiveness of oral health education and promotion activities as they relate to the oral health outcomes of children enrolled in EHS programs” (p. 14). |
| Author | Credentials: Ph.D., MS, RDH Position and Institution: Doctoral candidate in health services research, College of Health Sciences. Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: Scholarly, peer-reviewed journal Publisher: The Journal of Dental Hygiene Other: American Dental Hygienists’ Association (ADHA) |
| Date and Citation History | Date of publication: 2021 Cited By: 0 |
| Stated Purpose or Research Question | “The purpose of this systematic review was to address the question, “What oral health education and promotion activities are performed in EHS programs for staff, children, and caregivers in the United States?” (p. 15). |

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| Author's Conclusion | <p>"A limited number of studies have examined oral health education and promotion activities for EHS staff members and parents. Studies that focused on increasing pediatric oral health knowledge and practice behaviors among EHS staff members and parents revealed improved oral health knowledge and behaviors. Ongoing studies are needed to examine the effectiveness of oral health education and promotion interventions within EHS programs. Impacts of oral health education and promotion interventions on children's oral health also warrant examination in EHS programs. Collaboration with dental hygienists and dental hygiene education programs can support the oral health education and promotion activities of EHS programs and positively impact pediatric oral health and access to oral care" (p. 19-20).</p> |
| Overall Relevance to your Doctoral Capstone Project | <p>Overall Relevance of Article: Moderate Rationale: This systematic review relates to the population of low-income children and caregivers enrolled in early education programs. Ready, Set, Smile provides oral health education and services to a few Head Start programs. Although, most of their partnership sites are with elementary schools and other early education programs.</p> |
| Overall Quality of Article | <p>Overall Quality of Article: Moderate Rationale: Systematic review. Reputable journal. Novice publisher. Limited studies included in review.</p> |
| Your Focused Question and Clinical Bottom Line | <p>Question: What oral health services are provided in Early Head Start programs? Clinical Bottom Line: Early Head Start programs provide education and oral health promotion activities to young children, parents, and caregivers related in order to increase oral health knowledge and self-care behaviors.</p> |
| Your Lay Summary | <p>Early Head Start programs are programs that serve children and caregivers of low socioeconomic status. These programs are important for providing health promotion services to populations at risk of developing diseases. Oral health diseases, like cavities, are preventable. Unfortunately, cavities have been found in a high percentage of children under the age of 5. And they tend to go untreated. Early Head Start programs can provide oral health treatment and education to children and caregivers to prevent cavities. Early Head Start staff can also receive education from dental professionals to better teach and serve children and families about oral health. Videos, activities, and interviews can increase knowledge about oral health. These activities and practicing toothbrushing can also increase oral health behavior and self-confidence for staff, children, and caregivers. Dental professionals are encouraged to serve and educate community members about oral health.</p> |
| Your Professional Summary | <p>The purpose of this systematic review was to understand what oral health promotion activities are being utilized within Early Head Start programs across the United States. Authors used the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) to guide the systematic review. Articles included in this study "were peer-reviewed experimental and observational studies, conducted in the US, and written in English between 2000-2019" (p. 15). 363 total articles were initially selected for review from CINAHL, PubMed, EBSCO, Google Scholar, and Wiley Online databases. Five out of 363 articles were included in this review based on the inclusion criteria. Authors categorized the article findings according to oral health knowledge, oral health activities, and oral health promotion. These articles found significant improvements in parent/caregiver, children, and staff oral health knowledge after implementing educational videos, education interventions,</p> |

and motivational interviewing into interventions. Oral health activities used in Early Head Start programs focused incorporating educational activities for children and caregivers related to toothbrushing. Oral health promotion interventions targeted Early Head Start staff and found staff improved self-confidence, dental referrals, and oral health knowledge after oral health-related training.

Strengths of this study include clear inclusion and exclusion criteria for understanding what oral health activities are implemented within Early Head Start programs. Additionally, this systematic review was guided by PRISMA with clear implications for expanding the dental workforce. Limitations of this study include the few (5) articles included in this review and lack of randomized control trials. Therefore, findings cannot be generalized. However, authors encourage future studies to focus on oral health status of Early Head Start children after participating in oral health promotion programs, as well as calling dental professionals to serve/educate within the community in order to improve oral health outcomes for children/families.

7. Initial Appraisal: Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis.

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| | Overview of Article |
| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review and meta-analysis |
| APA Reference | Knorst, J. K., Sfreddo, C. S., de F Meira, G., Zanatta, F. B., Vettore, M. V., & Ardenghi, T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. <i>Community dentistry and oral epidemiology</i> , 49(2), 95–102. https://doi.org/10.1111/cdoe.12616 |
| Abstract | Objectives To systematically review observational studies assessing the association between socioeconomic status (SES) and oral health-related quality of life (OHRQoL) in children, adolescents and adults. Methods Electronic searches were performed in the PubMed, Embase, Web of Science, LILACS and Scopus databases for articles published up to September 2020. Two independent reviewers performed the search and critical appraisal of the studies. The inclusion criteria were observational studies that evaluated the effect of SES on the OHRQoL in all age groups using validated methods. Quality assessment was conducted using the Newcastle-Ottawa Scale. Data were extracted for meta-analysis followed by a meta-regression analysis. A random-effects model was used to estimate the pooled calculate prevalence ratio (PR) and respective 95% confidence intervals (CI) for each study. Results The search strategy retrieved 6114 publications. Some 139 articles met the eligibility criteria and were included in the systematic review. Of those, 75 were included in the general meta-analysis they represented a total sample of 109 269 individuals. People of lower SES had worse OHRQoL (PR 1.30; 95% CI 1.26-1.35). In the meta-analyses of different subgroups, an association was found between low SES and worse OHRQoL in countries of all economic classifications, in all age groups and irrespective of the socioeconomic indicator used. A socioeconomic gradient in OHRQoL was also observed, in which the lower the individuals' socioeconomic position, the poorer their OHRQoL. Conclusions Individuals of low SES had poorer OHRQoL, regardless of the country's economic classification, SES indicator and age group. Public policies aiming to reduce social inequalities are necessary for better OHRQoL throughout life" (p. 95). |
| Author | Credentials: N/A Position and Institution: School of Dentistry, Department of Stomatology, Universidade Federal de Santa Maria, Santa Maria, Brazil Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Community Dentistry and Oral Epidemiology Other: Journal of Wiley Online Library |
| Date and Citation History | Date of publication: 2021 Cited By: 12 |
| Stated Purpose or Research Question | "Accordingly, our aim was to systematically review the evidence from observational studies assessing the association between SES and OHRQoL in children, adolescents and adults, and additionally, to assess which socioeconomic measures influence OHRQoL" (p. 2). |

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| Author's Conclusion | "The systematic review provides evidence that low SES is associated with poorer OHRQoL in all age groups" (p. 7). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to oral health of individuals of low socioeconomic status. It evaluates oral health outcomes of quality of life for all age groups (including children and adolescents). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |
| Your Focused Question and Clinical Bottom Line | Question: What contextual and environmental factors influence oral health related quality of life of low-income people? Clinical Bottom Line: Socioeconomic status is a complex, environmental construct that significantly influences the oral health-related quality of life of low-income individuals across the lifespan. |
| Your Lay Summary | A study was published this year (2021) to review the relationship between socioeconomic status (SES) and oral health-related quality of life. SES includes factors such as income, education, and careers. Oral health-related quality of life (OHRQoL) is the influence that oral diseases have on overall health, well-being, and daily activities. These two factors are related because of the influence income and education have on accessing dental care services and materials needed for oral hygiene. This study wanted to test the relationship of these two factors across the globe for all age groups. They found an important relationship between SES and OHRQoL regardless of age and country. These findings suggest that each country should address SES barriers to OHRQoL, including cost and education. Please contact the Minnesota Department of Health for more information on how your community can best support your oral health. |
| Your Professional Summary | This systematic review and meta-analysis synthesized findings from cross-sectional and cohort studies to analyze the associations between socioeconomic status (SES) and oral-health related quality of life (OHRQoL). Researchers gathered a total of 6114 publications, of which they included 139 for systematic review and 75 for meta-analysis. Publications were gathered for all age groups and across 22 different countries. Key findings from the analysis indicated a significant relationship between low socioeconomic status and oral health-related quality of life for children, adolescents, and adults regardless of the country's economic classification. Strengths of this study include a clear methodology related to the collection of literature related to the PECO question and protocols implemented to reduce bias. Additionally, researchers had a high rate of consistency in gathering related publications (Kappa coefficients of 0.93 for titles and 0.92 for abstracts). Another strength was the integration of publications across 22 different countries for literature related to various age groups. Limitations of this study include the isolation of cross-sectional and cohort studies. This review could be strengthened if additional research study types were implemented within the analysis to validate both correlational and causal relationships. Research analysis was very concise; however, more detail could have been provided to further discuss differences across SES constructs and identify similarities and differences between each of the oral |

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| | <p>health-related quality of life assessments used with participants. Implications of this study indicate the need for public health professionals to support both personal and environmental socioeconomic-related factors that influence oral health outcomes for low-income populations across the lifespan.</p> |
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8. Initial Appraisal: A scoping review of the roles, training, and impact of community health workers in oral health.

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| | Overview of Article |
| Type of article | Overall Type: Review of Research Study Specific Type: Scoping review |
| APA Reference | Garcia, D. T., Lawson, J. A., Brody, E. R., McKernan, S. C., Raskin, S. E., Arauz, N. R., Mosavel, M., & Brickhouse, T. H. (2021). A scoping review of the roles, training, and impact of community health workers in oral health. <i>Community dental health</i> , 38(3), 198–208. https://doi-org.pearl.stkate.edu/10.1922/CDH_00370Garcia11 |
| Abstract | <p>“Objective: To synthesize English or Spanish-language literature on community health workers' (CHWs') roles, training, and impact in oral health. Basic research design: A scoping review conducted in accordance with the Arksey and O'Malley (2005) methodological framework. Method: Electronic literature searches were conducted in Medline (Ovid), Embase (Ovid), DOSS, CINAHL, Web of Science, and Global Health CAB from inception of the databases to April 2020. Three reviewers independently conducted the title and abstract and full-text reviews. This was followed by data charting by three reviewers and data summarizing by two reviewers. Results: Out of the 36 articles that met the inclusion criteria, most took place in the United States (n=15) with most published between 2012 and 2019 (12). CHWs were incorporated in programs that focused on access to dental care (n=10), oral health promotion only (9), early childhood caries (8), oral health promotion and services (5), and oral cancer screening (4). Common roles included providing oral health education and behavior change motivation to community members, facilitating utilization of dental services, and the delivery of diagnostic and dental services to community members. Training and outcomes were not consistently described across studies. Conclusion: CHWs have been used in oral health programs and interventions across a wide range of locations and contexts. The implementation and scaling-up of oral health CHW programs requires appropriate provision of training as well as community embedded monitoring and evaluation structures based on rigorous methods with clearly defined outcomes” (p. 198).</p> |
| Author | <p>Credentials: PhD Position and Institution: Assistant Professor, Department of Health Behavior and Policy, Virginia Commonwealth University, School of Medicine, United States Publication History in Peer-Reviewed Journals: Moderate</p> |
| Publication | <p>Type of publication: Scholarly, peer-reviewed Publisher: Community Dental Health Journal Other: N/A</p> |
| Date and Citation History | <p>Date of publication: 2021 Cited By: 0</p> |

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| Stated Purpose or Research Question | “This scoping review will enable us to determine the scope of published literature to date on CHWs’ involvement in oral health interventions, which is necessary to uncover gaps and determine future directions” (p. 199). |
| Author’s Conclusion | “CHWs have been used in oral health programs and interventions across a wide range of locations and contexts. The implementation and scaling-up of oral health CHW programs requires appropriate provision of training as well as community embedded monitoring and evaluation structures based on rigorous methods with clearly defined outcomes” (p. 198). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Good Rationale: This scoping review relates directly to the interprofessional team working with Ready, Set, Smile that contains community health workers in order to better understand the breadth and depth of experiences community health workers have in providing oral health services. |
| Overall Quality of Article | Overall Quality of Article: Moderate Rationale: Scoping review. Reputable journal. Novice publisher. Published within the last year. |
| Your Focused Question and Clinical Bottom Line | Question: What are community health workers’ scope of practice for addressing oral health within the community? Clinical Bottom Line: Community health workers CHWs have a strong skillset in providing oral health care services within various contexts. Overall, CHWs contribute to oral health care through increasing access to dental care, promoting oral health, addressing early childhood caries, and screening for oral cancer. |
| Your Lay Summary | Community health workers are important professionals that help community members access oral health care services. They also support dental professionals in providing services to reduce cavities and screen for oral cancer. Community health workers can serve in multiple settings. When working with children and families, community health workers are important for connecting them with dentist providers, educating them about oral health, and helping them access and use oral health services and practices. It is important for community health workers to maintain the best training so they can serve community members. Dental providers can provide continuing education to train community health workers about current best practices in oral health. |
| Your Professional Summary | The purpose of this scoping review was to understand the scope of practice, training, and influence of community health workers within oral health. Authors used Arksey & O’Malley methodological framework to guide this scoping review. All types of articles were included in this review, which incorporated oral health and community health workers. Articles were excluded if they did not exclusively focus on community health workers or if they did not mention oral health. 2,696 articles were identified for the initial search using Medline, Embase, DOSS, CINAHL, Web of Science, and Global Health CAB Direct. 36 total articles were included in the thematic analysis. Articles “were published between 1972 and 2019, with most between 2012 and 2019” (p. 199). The following themes were identified from the scoping review: “(1) access to dental care, (2) oral health promotion only, (3) early childhood caries, (4) oral health promotion and services, |

and (5) oral cancer screening” (p. 200). Community health workers have proven beneficial in each of these five areas of oral health service delivery and serve as an essential team member of interprofessional oral health care teams. Areas of growth in the community health worker field include providing ongoing, structured continuing education standards and requirements to optimize the oral health care services delivery for the communities they serve.

Strengths of this scoping review include an in-depth methodology and evidence-based framework to guide the research. Additionally, researchers outlined clear inclusion/exclusion criteria, as well as three researchers collaborating to identify, screen, and theme articles. Furthermore, the discussion section within the scoping review clearly linked the changes in economic and political climates that have impacted the community health profession across the decades. Limitations of this study acknowledge the lack of researcher assessment for the quality of articles included in this review.

9. Initial Appraisal: Interdisciplinary community-based oral health program for women and children at WIC.

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| | Overview of Article |
| Type of article | Overall Type: Primary research study Specific Type: Retrospective cohort study |
| APA Reference | Gold, J. & Tomar, S.L. (2018). Interdisciplinary community-based oral health program for women and children at WIC. <i>Maternal and Child Health Journal</i> , 22, 1617-1623. https://doi.org/10.1007/s10995-018-2557-3 |
| Abstract | Objectives To evaluate the women, infants, and children (WIC) Oral Health Program in a county in Florida. Methods The non-traditional interdisciplinary program of the current study was designed to reach at-risk populations with untreated dental diseases and limited access to care; it provides oral health education, dental screenings, preventive dental services, and referrals for women, children, and families at WIC offices. We evaluated the health status of patients enrolled in the program and the services provided. Results From 2013 to 2016, the program provided dental screenings for 576 children and 180 women. Caries prevalence for 3–5 year olds was 46.0%. Only 6.6% (12/114) of pregnant women were eligible for comprehensive dental care under Medicaid (< 21 years). Further, 71.2% (47/66) of all pregnant women had unmet dental care needs. Conclusions for Practice Our results suggested that many children and women had untreated dental diseases and need preventive services and dental care. Also, many pregnant women were not covered by Medicaid. This program demonstrates that collaboration with the WIC program can improve access to oral health services for underserved populations” (p. 1617). |
| Author | Credentials: D.D.S., M.P.H., C.P.H., Ph.D Position and Institution: Associate Professor, Department of Community Dentistry and Behavioral Science, University of Florida College of Dentistry Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Scholarly, peer-reviewed journal Publisher: Maternal and Child Health Journal Other: Springer |
| Date and Citation History | Date of publication: 2018 Cited By: 8 |
| Stated Purpose or Research Question | “The purpose of the current study was to describe the WIC Oral Health Program in a county in Florida and evaluate the needs for dental care” (p. 1618). |
| Author’s Conclusion | “Interdisciplinary collaboration between non-dental providers and oral health professionals is essential for improving the oral health of our vulnerable populations. Oral health education for pregnant women and mothers with young children that stresses the importance of oral health, good oral hygiene habits, and a healthy nutritional diet can help prevent dental diseases in children and should be provided as early as possible. Our WIC Oral Health Program may serve as a model to |

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| | integrate oral health services into local WIC programs, providing great contributions to public health” (p. 1622). |
| Overall Relevance to your Doctoral Capstone Project | Overall Relevance of Article: Moderate Rationale: This study relates directly to oral health education and preventive services provided to young children and their caregivers. |
| Overall Quality of Article | Overall Quality of Article: Poor Rationale: Retrospective cohort study. Reputable journal and publisher. Published within the last 4 years. |
| Your Focused Question and Clinical Bottom Line | Question: What are the oral health care needs for children and caregivers enrolled in Woman, Infant, and Children (WIC) programs? Clinical Bottom Line: Mothers and children enrolled in WIC program have an increased need for oral health care services due to untreated decay. |
| Your Lay Summary | Women, Infants, and Children (WIC) programs are important for helping children and their mothers receive health care. Families enrolled in WIC programs are at risk of developing cavities due to barriers in cost, coverage, and access to dental care. Staff at WIC programs can teach children and families about oral health practices, improve their access to dental care, provide toothbrushes and oral health screens/services. Local counties and health professionals can analyze the trends experienced among families enrolled in WIC. This is useful for determining how best to educate them about oral health and provide dental care treatment. Both education and treatment can empower families to practice good health at home, as well as prevent cavities from getting worse. |
| Your Professional Summary | The purpose of the retrospective cohort study was to evaluate the dental health care needs of women and children enrolled in a Woman Infant and Children (WIC) program in “a county in Florida” (p. 1618). Based on the data collected by researchers, 576 children under the age of 5 and 180 mothers received oral health education and services from May 2013 to August 2016. 529 out of 576 children received silver diamine fluoride applications. Most of the children served were black. Young children and mothers served showed untreated dental caries upon the initial screen. Strengths of the study included a large sample size of children and mothers served, a description of the program evaluation and correlations assessed between Florida county and national reports from Healthy People 2020. Limitations include a retrospective study, as well as one county in Florida evaluated for dental health care needs. Implications of this study indicate the importance in evaluating the dental care needs of children and women enrolled in WIC programs across multiple communities to assess the needs of vulnerable populations. These needs assessments can inform essential next steps to oral health program evaluation to meet the specific needs of the populations served. Interdisciplinary oral health teams are important in addressing oral health care. A team approach is essential to expanding the dental workforce, as well as |

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| | increasing the access and utilization of oral health care services and hygiene practices for children and families. |
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10. Initial Appraisal: Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status.

| | Overview of Article |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Randomized control trial |
| APA Reference | Wilson, A., Brega, A., Campagna, E., Braun, P., Henderson, W., Bryant, L., Batliner, T., Quissel, D., & Albino, J. (2016). Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status. <i>Pediatric Dentistry</i> , 38(1), 47-54. https://aapd.publisher.ingentaconnect.com/content/aapd/pd |
| Abstract | “Purpose —The purpose was to validate oral health knowledge and behavior measures from the Basic Research Factors Questionnaire, developed to capture specific themes contributing to children’s oral health outcomes and influence of caregivers. Methods —Data were collected as part of a randomized clinical trial (N=992) aimed at reducing dental caries in young children. Participants were American Indian/Alaska Native caregivers with a child aged three to five years enrolled in a Navajo Nation Head Start Center. Caregivers completed the questionnaire at enrollment with concomitant evaluation of children for decayed, missing, and filled tooth surfaces (dmfs). Oral health knowledge and behavior outcomes were compared with convergent measures (participant sociodemographic characteristics, oral health attitudes, indicators of oral health status). Results —Caregiver oral health knowledge was significantly associated with education, income, oral health behavior, and all but one of the oral health attitude measures. Behavior was significantly associated with several measures of oral health attitudes and all but one measure of oral health status. As the behavior score improved, dmfs declined, child/caregiver overall oral health status improved, and pediatric oral health quality of life improved. Conclusions —Questionnaire measures were valid for predicting specific caregiver factors potentially contributing to children’s oral health status” (p. 1). |
| Author | Credentials: DDS, MS Position and Institution: School of Dental Medicine, University of Colorado Anschutz Medical Campus Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Pediatric Dentistry Other: Official journal of the American Academy of Pediatric Dentistry (AAPD) |
| Date and Citation History | Date of publication: 2016 Cited By: 33 |
| Stated Purpose or Research Question | “Thus, the objective of this study was to validate oral health knowledge and behavior measures developed to capture specific themes contributing to children’s oral health outcomes in relation to AI caregivers” (p. 2). |
| Author’s Conclusion | “The results of this investigation support the following conclusions: 1. The BRFQ knowledge and behavior items showed convergent and divergent validity with other measures in expected directions and provided meaningful information related to caregivers’ influence on the oral health status of young children in an AI population. 2. Findings suggest greater emphasis on development of caregivers’ adherence to oral health behaviors will advance children’s oral health status through promoting a positive shift towards improved caregiver self-efficacy and attitudes related to perceived barriers and benefits of recommended oral health behaviors” (p. 8). |

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| <p>Overall Relevance to your Doctoral Capstone Project</p> | <p>Overall Relevance of Article: Good relevance Rationale: This study relates directly to low-income families’ oral health literacy and its influence on their childrens’ oral health outcomes.</p> |
| <p>Overall Quality of Article</p> | <p>Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years.</p> |
| <p>Your Focused Question and Clinical Bottom Line</p> | <p>Question: What contextual and caregiver factors are associated with oral health outcomes and hygiene behaviors of low-income American Indian children? Clinical Bottom Line: Caregiver oral health behavioral adherence is significantly associated with the oral health outcomes of low-income children. Improving caregiver oral health literacy is one method to improving oral health behavioral adherence of children and caregivers; therefore, supporting oral health outcomes of children.</p> |
| <p>Your Lay Summary</p> | <p>A 2016 study was done to analyze the relationship between American Indian caregiver knowledge, beliefs, and behaviors on their children’s oral health. A questionnaire called the Basic Research Factors Questionnaire (BRFQ) was used. This study tested the accuracy of analyzing the relationship between caregiver responses. They found that the BRFQ was reliable and accurate. It evaluated caregiver factors on children’s oral health outcomes. Findings stated:</p> <ul style="list-style-type: none"> • Caregiver knowledge is associated with positive oral health attitudes. • Caregiver knowledge is associated with oral health behaviors and habits. • Caregiver self-confidence is associated with dentist recommended oral health behaviors. <p>Addressing caregiver oral health knowledge, attitudes, and behaviors can benefit children’s oral health. This questionnaire can be used with American Indian caregivers and potentially other cultures. And, can be used to gain baseline knowledge on how to best educate caregivers about oral health. We greatly appreciate you taking the time to fill out this questionnaire as each response is carefully reviewed to understand how to best serve your family.</p> |
| <p>Your Professional Summary</p> | <p>Survey data gathered during a randomized control trial (RCT) was evaluated to test psychometric properties of the Basic Research Factors Questionnaire (BRFQ) in associating caregiver knowledge, beliefs, and behaviors to their child(ren)’s oral health status. 992 caregivers completed BRFQ prior to the Head Start Center intervention study. Most caregivers were American Indian, the child’s mother, completed high school, and had low income. Construct, convergent, and divergent validity measures were tested to evaluate BRFQ associations. Results concluded BRFQ measures were valid and reliable for identifying significance of caregiver knowledge and behaviors on children’s oral health status. Key findings concluded that (1) oral health knowledge was significantly associated with oral health attitudes, (2) oral health knowledge was negatively associated with perceived barriers, (3) greater self-efficacy scores were significantly associated with behavioral adherence, (4) caregiver oral health knowledge was not significantly associated with oral health outcomes, (5) oral health behaviors were significantly associated with oral health status of children.</p> <p>Strengths of this study included a detailed methods section with rationale for specific measures, and data analysis tools. Validated measures were well-supported by health</p> |

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| | <p>behavior models. Study results were compared with another American Indian tribe to generalize findings. Limitations of this study included caregiver-reported questionnaire subject to bias. Study identified two groups of caregiver-child dyads in the original RCT but did not identify key differences between the intervention and control group. Study could have been strengthened if results of the RCT were compared with caregiver responses at baseline and completed after the intervention. Implications of this study validate the use of the BRFQ when analyzing American Indian caregiver knowledge, beliefs, and behaviors that may influence low-income children's oral health outcomes. Future studies should evaluate the effectiveness of this assessment tool with various cultural groups.</p> |
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Appendix B – Scoping Review

Scoping Review Course Manuscript

Factors influencing oral health of low-income families: A scoping review

Rachel McPherson

Scoping Review Advisor: Dr. Hannah Oldenburg, EdD, OTR/L, BCPR

St. Catherine University

Abstract

Introduction & Background:

Children from low-income families experience limited access and affordability to dental care leading to an increased risk of developing dental caries and higher rates of untreated dental caries. The purpose of this scoping review is to understand the contextual factors that influence families of low socioeconomic status access and utilization of oral health services and hygiene practices. The following research question was formulated: “In the existing evidence, what are the contextual supports and barriers to oral health services and hygiene practices for families of low socioeconomic status (SES)?”

Methods:

A review of the literature was conducted from June 18, 2021 through July 25, 2021 using databases, such as PubMed and CINAHL Plus Full Text. Initial selection of articles was based on the quality of evidence, relevance to contextual factors that impact low-income families, comparison of different oral health education delivery methods, and the potential impact to improve child oral health outcomes. Arksey and O’Malley’s Methodological Framework (2005) was used to guide the review through charting, collating, summarizing, and reporting results.

Results:

Twenty-three articles met the established inclusion criteria and were selected for appraisals. Fourteen articles were primary research articles, six articles were reviews of research, and three articles theoretical/conceptual. This review identified four themes related to the contextual factors that influence oral health access and utilization for

families of low SES, including: community-based programs, interdisciplinary teams, caregiver oral health literacy, and oral health-related quality of life (OHRQoL).

Discussion/Conclusion:

The results of this scoping review revealed the importance of community-based programs and interdisciplinary oral health teams in improving access to oral healthcare services, as well as the significant influence caregiver oral health literacy has on COHRQoL. Dental professionals and allied health professionals can improve access and utilization for this population through establishing community partnerships, expanding the dental workforce, addressing caregiver oral health literacy, and measuring COHRQoL. Limitations noted from this scoping review include lack of generalizability, causal relationships, policy analysis, and peer review. Despite these limitations, the dental workforce can incorporate implications and recommendations from this review to improve access and utilization among the communities they serve. Future studies should evaluate the long-term effectiveness of these strategies on sustained improvements to access, utilization, hygiene behaviors, and quality of life.

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Introduction and Background

Children from low-income families experience limited access and affordability to dental care leading to an increased risk of developing dental caries and higher rates of untreated dental caries (Chestnutt, 2014; Gold & Tomar, 2018; WHO, n.d.). Untreated dental caries is associated with poor oral health, tooth decay, pain, and discomfort (Blake et al., 2015; Nota et al., 2019). These symptoms negatively impact the child's participation and performance in school-related activities, eating and sleep, play, and socialization (Blake et al., 2015; Chestnutt, 2014; Stein et al., 2012).

Improving access to oral healthcare services for low-income families is the primary focus of local, national, and global population health initiatives (Blake et al., 2015; Chestnutt, 2014; Healthy People 2030, n.d.; HHS, n.d.; MN Department of Health, n.d.c; WHO, n.d.). Although improvements have been made to increase access to oral healthcare, the rate of children and low-income families who do not utilize these services continues to increase (Blake et al., 2015; HHS, n.d.; MN Department of Health, n.d.a, b, c, d.; Ready, Set, Smile, 2020; WHO, n.d.). To help address this health and wellness need, allied health professionals may be beneficial for expanding the dental workforce by improving *both* access and utilization of oral healthcare services and daily oral hygiene practices (Anderson et al., 2020; Gold & Tomar, 2018; Iwao et al., 2019).

The purpose of this scoping review is to understand the contextual supports and barriers to oral health services and hygiene practices for low-income families to inform healthcare service delivery for both community-based oral healthcare teams and traditional dental clinics. This scoping review will be used to educate the oral healthcare team at Ready, Set, Smile about these contextual factors in order to increase access to oral healthcare services *and* increase family utilization of services and daily oral

hygiene practices (A. Torre, G. Green, H. Oldenburg, R. McPherson, S. de Sam Lazaro, personal communication, May 19, 2021). It may also be used to inform additional community-based oral healthcare teams about quality improvement methods for education and preventive services (A. Torre, G. Green, H. Oldenburg, R. McPherson, S. de Sam Lazaro, personal communication, May 19, 2021). The following research question was formulated: “In the existing evidence, what are the contextual supports and barriers to oral health services and hygiene practices for families of low socioeconomic status (SES)?”

Methods: Databases and Alternative Searches for Evidence

This scoping review used Arksey and O'Malley's Methodological Framework (2005) to guide the review through charting, collating, summarizing, and reporting results. A review of the literature was conducted from June 18, 2021 through July 25, 2021 using PubMed, CINAHL Plus Full Text, American Occupational Therapy Association (AOTA.org), St. Catherine University's Scholarly Repository - SOPHIA Home (sophia.stkate.edu), de Sam Lazaro (2021), and Anderson et al. (2020) (Appendix B and D). The search included primary evidence and grey literature. 122 articles were relevant to identifying contextual supports and barriers to oral health services and hygiene practices for families of low socioeconomic status (SES) (Appendix B and D). Twenty-four of the most relevant articles were chosen for initial appraisals (Appendix F and G). Three of these were selected for critical appraisals (Appendix F and H).

Initial selection of articles was based on the quality of evidence, relevance to contextual factors that impact low-income families, comparison of different oral health education delivery methods, and the potential impact to improve child oral health

outcomes, such as child oral health-related quality of life (COHRQoL), oral health literacy, and hygiene behaviors (Appendix I). The literature selected for critical appraisals met multiple criteria regarding knowledge dissemination and oral healthcare service delivery involving children or families of low socioeconomic status - all with the goal of improving oral health outcomes for this population. Common settings, populations, and programs mentioned in the abstracts included children and caregivers, community-based settings and schools, and educational programs to improve health literacy and health behaviors.

Results: Appraisals and Reviews of Evidence and Themes

The results of this scoping review are reported according to the stage of the review process: collating, summarizing, and reporting. Twenty-four relevant studies were identified for initial appraisal (Appendix F and G). Twenty-one of these articles were primary research articles, systematic reviews, or meta-analyses. Three sources were grey literature and included community frameworks and a conceptual model (Table 1). Levels of evidence ranged from level I to level VII. One article was excluded during theme analysis due to the absence of oral health addressed within the study (Figure 1).

Collating

Twenty-three articles met the established inclusion criteria and were selected for appraisals (n = 20 for initial appraisals; n = 3 for critical appraisals). Fourteen articles were primary research articles, six articles were reviews of research, and three articles theoretical/conceptual (Table 1). Inclusion criteria for developing common themes consisted of one or more of the following: children and/or families of low socioeconomic

status, articles that explicitly state or infer contextual factors that impact low-income families, primary research or review research involving oral health education or oral health literacy, and intervention programs that evaluate pediatric oral health outcomes, such as presence of dental caries and/or hygiene behaviors.

Of the 14 primary research studies, six were conducted in the United States (Biordi et al., 2015; Chi et al., 2014; Dela Cruz et al., 2012; Horowitz et al., 2017; Spetz et al., 2019; Wilson et al., 2016), two in the United Kingdom (Freeman et al., 2016; Levin & Currie, 2010), one in Greece (Angelopoulou et al., 2015), one in the Netherlands (Duijster, et al., 2015), one in Pakistan (Haleem et al., 2016), one in Germany (Qadri et al., 2018), one in Finland (Halonen et al., 2013), and one conducted with 70 participating low and middle economic countries (Bernabe et al., 2017). The studies included in the literature review were from the United States and Nicaragua (Davis & Plaspohl, 2017). The systematic reviews evaluated studies from various countries, including India (Nakre & Harikiran, 2013), Brazil (Knorst et al., 2021; Kumar et al., 2014), and additional 20 member countries of the Organisation for Economic Co-operation and Development (OECD), including (but not limited to) the United States (Davis & Plaspohl, 2017; Raison & Harris, 2019), Canada, Australia, Denmark, Norway, and Chile (Harris et al., 2017). The theoretical articles consisted of one conceptual model, one community framework report, and one critical issues manuscript which all discussed social determinants of health factors influencing vulnerable and underserved populations in the United States (Bersell, 2017; Chazin & Glover, 2017; Fisher-Owens et al., 2007).

The articles selected for this scoping review ranged from Level I to Level VII evidence and were gathered from scholarly peer-reviewed journals published in the United States and internationally. Seventeen out of 23 studies were retrieved from journals related to public health (n = 7), community dentistry (n = 6), and pediatric journals (n = 4). Thirteen articles were published between 2016-2021. Nine articles were published between 2010-2015. A single conceptual model article was published in 2007. Articles included in the scoping review consisted of six randomized control trials (RCTs), four systematic reviews, three survey data analyses, two cohort studies, two qualitative studies, two literature reviews, one mixed methods article, one systematic review and meta-analysis, one conceptual framework, and one multilevel conceptual model. Twenty-three studies answered the scoping review question, which included the population of low-income children and/or families, contextual factors, community-based oral health service delivery, and oral health education/literacy interventions and their influence on hygiene behaviors.

Children and Families of Low Socioeconomic Status

The first inclusion criteria was the population of children and families of low socioeconomic status. Of the 23 studies included in this scoping review, seven studies included child participants of low socioeconomic status (Angelopoulou et al., 2015; Chi et al., 2014; Dela Cruz et al., 2012; Fisher-Owens et al., 2007; Freeman, et al., 2016; Halonen et al., 2013; Levin & Currie, 2010), six included caregiver-child dyad groups (Biodi et al., 2015; Kumar et al., 2014; Raison & Harris, 2019; Nakre & Harikiran, 2013; Spetz et al., 2019; Wilson et al., 2016), and a single qualitative study included caregiver participants of low SES (Duijster et al., 2015). The remaining studies (n = 9) compared

children and families of low SES to higher SES students, individuals, or countries across the lifespan (Bernabe et al., 2017; Bersell, 2017; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Haleem et al., 2016; Harris et al., 2017; Horowitz et al., 2017; Knorst et al., 2021; Qadri et al., 2018). Taken as a whole, child participant ages ranged from in utero to 17 years of age from various contexts.

Contextual Factors

The second inclusion criteria was contextual factors that influence families of low socioeconomic status in accessing and utilizing oral health services and behaviors. Six reviews of research and four survey data studies primarily focused on evaluating the relationships between contextual factors and oral healthcare access, utilization, and hygiene practices (Bersell, 2017; Bernabe et al., 2017; Chi et al., 2014; Davis & Plaspohl, 2017; Knorst et al., 2021; Kumar et al., 2014; Levin & Currie, 2010; Nakre & Harikiran, 2013; Raison & Harris, 2019; Spetz et al., 2019). Six primary research studies provided interventions in urban and rural settings (Angelopoulou et al., 2015; Dela Cruz et al., 2012; Haleem et al., 2016; Qadri et al., 2018; Spetz et al., 2019; Wilson et al., 2016). Two qualitative studies interviewed dental professionals and caregivers to understand their perspectives of the contextual factors influencing child(ren)'s oral health (Duijster et al., 2015; Horowitz et al., 2017). One conceptual model and one systematic review discussed multi-level factors that influence individual oral health behaviors (Fisher-Owens et al., 2007; Harris et al., 2017).

Community-Based Programs

The third commonality was the provision of community-based programs in oral healthcare service delivery to increase access among children and families of low

socioeconomic status. Eleven studies reviewed or partnered with community programs to evaluate the effectiveness of preventive oral healthcare services for low-income families (Bersell, 2017; Biordi et al., 2015; Davis & Plaspohl, 2017; Dela Cruz et al., 2012; Duijster, et al., 2015; Halonen et al., 2013; Horowitz et al., 2017; Kumar et al., 2014; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016). Five studies focused on mother and child groups (Biordi et al., 2015; Dela Cruz et al., 2012; Horowitz et al., 2017; Nakre & Harikiran, 2013; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016). Five studies provided oral health education interventions in school-based settings (Angelopoulou et al., 2015; Freeman et al., 2016; Haleem et al., 2016; Levin & Currie, 2010; Qadri et al., 2018). A community framework (Chazin & Glover, 2017) and conceptual model (Fisher-Owens et al., 2007) were developed to guide community-based oral health programs.

Oral Health Education & Hygiene Practices

The fourth inclusion criteria was related to the education capstone type involving oral health education programs to improve daily hygiene practices among families of low socioeconomic status. Twelve studies evaluated or reviewed oral health education and its influence on oral health behaviors, including toothbrushing and/or dietary practices (Angelopoulou et al., 2015; Biordi et al., 2015; Duijster et al., 2015; Freeman et al., 2016; Haleem et al., 2016; Halonen et al., 2013; Kumar et al., 2014; Levin & Currie, 2010; Nakre & Harikiran, 2013; Qadri et al., 2018; Raison & Harris, 2019; Spetz et al., 2019). Six studies analyzed oral health literacy and its influence on oral health outcomes of oral health-related quality of life (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014; Nakre & Harikiran, 2013; Wilson et al., 2016). Four studies specifically assessed caregiver oral health knowledge/literacy or attitudes and its

influence on their child(ren)'s hygiene behaviors (Dela Cruz et al., 2012; Duijster et al., 2015; Nakre & Harikiran, 2013; Wilson et al., 2016).

Table 1

Characteristics of Research Studies (n=23)

| Criteria | | Number |
|-----------------------|-------------------------------------------|--------|
| Study Design | Primary Research | |
| | Randomized Control Trial | 6 |
| | Qualitative | 2 |
| | Survey data | 3 |
| | Cohort study | 2 |
| | Mixed Methods | 1 |
| | Research Review | |
| | Systematic Review | 4 |
| | Systematic Review & Meta-analysis | 1 |
| | Literature Review | 2 |
| | Conceptual/Theoretical Articles | |
| | Community Framework | 1 |
| | Conceptual Model | 1 |
| Intervention Settings | WIC sites | 2 |
| | Mommy & Me Groups | 3 |
| | Schools | 5 |
| | Head Start Centers | 3 |
| Source of Publication | Pediatrics | 1 |
| | Journal of Pediatric Dentistry | 2 |
| | Journal of Dentistry for Children | 1 |
| | International Journal of Dentistry | 1 |
| | Journal of Dental Hygiene | 2 |
| | BioMed Central | |
| | Oral Health | 2 |
| | Public Health | 2 |
| | American Journal of Public Health | 2 |
| | Health | 3 |
| | Community Dentistry and Oral Epidemiology | 2 |
| | Community Dental Health | 1 |
| | Health Education Journal | 5 |
| Other | | |
| Participants | Children | 7 |
| | Caregivers | 1 |
| | Caregiver-Child Dyad Groups | 6 |
| | Dental Professionals | 1 |
| | Individuals/Adults of Low SES | 9 |

Summarizing

The purpose of this scoping review was to explore the existing evidence related to the contextual factors that influence families of low socioeconomic status in accessing and utilizing oral healthcare services and daily hygiene practices. Twenty-three studies answered the scoping review question related to the population of low-income children and/or families, contextual factors, community-based oral health service delivery, and oral health education/literacy interventions and their influence on hygiene behaviors. This review identified four themes: community-based programs & service delivery, interdisciplinary teams, caregiver oral health literacy, and oral health-related quality of life.

Theme One: Community-Based Programs & Service Delivery

Several studies included in this scoping review involved community-based program service delivery (n = 11) and school-based interventions (n = 5) to support the access of oral healthcare services for low-income children and caregivers (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Davis & Plaspohl, 2017; Dela Cruz et al., 2012; Duijster, et al., 2015; Freeman et al., 2016; Haleem et al., 2016; Halonen et al., 2013; Horowitz et al., 2017; Kumar et al., 2014; Levin & Currie, 2010; Qadri et al., 2018; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016). Common community-based programs included Woman, Infants, and Children (WIC) partner sites (Biordi et al., 2015; Horowitz et al., 2017), Head Start Centers (Horowitz et al., 2017; Spetz et al., 2019; Wilson et al., 2016), and Mommy & Me groups (Dela Cruz et al., 2012; Nakre & Harikiran, 2013; Raison & Harris, 2019; Spetz et al., 2019).

For example, Biordi et al. (2015) evaluated the impact of an interdisciplinary, oral health preventive program in increasing access to dental services for children enrolled in rural and urban Women, Infant, and Children (WIC) site programs. Interdisciplinary team members involved in this cohort study provided fluoride varnish applications to children at their three- and six-month follow-up appointments. Oral health screenings and caregiver surveys were evaluated at each appointment. Results of this study indicated that urban site children experienced a significantly greater presence of dental caries than the rural site at visit one. However, by visits two and three, there was no significant difference in the presence of dental caries between sites. Additionally, there was a significant increase in the proportion of participants who visited the dentist and an increase in daily toothbrushing from visit one to visit three. Findings from this study suggested that community-based programs can support access to dental care, thus improving oral health outcomes for low-income children (Biordi et al., 2015).

Theme Two: Interdisciplinary Oral Health Teams

Eleven studies used or discussed interdisciplinary team members to improve access and utilization of oral healthcare services for low-income families (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Haleem et al., 2016; Halonen et al., 2013; Horowitz et al., 2017; Qadri et al., 2018; Spetz et al., 2019). These interdisciplinary teams consisted of dental therapists, nurse practitioners, dietitians, public health professionals, and teachers who delivered preventive oral health services and provided education to children and their caregivers. Additionally, 13 studies identified the significant role caregivers have on their child(ren)'s oral health and therefore acknowledge the need to

include caregivers in the provision of oral health services and oral health education (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Fisher-Owens et al., 2007; Halonen et al., 2013; Harris et al., 2017; Horowitz et al., 2017; Levin & Currie, 2010; Raison & Harris, 2019; Wilson et al., 2016). Multiple programs (n=6) collaborated with dieticians to empower families in improving oral health, overall health, and associated oral health/dietary practices (Biordi et al., 2015; Chi et al., 2014; Duijster et al., 2015; Freeman et al., 2016; Horowitz et al., 2017; Levin & Currie, 2010).

Theme Three: Caregiver Oral Health Literacy

Several studies (n=13) discussed the significant impact caregivers have on their children's oral health (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Fisher-Owens et al., 2007; Halonen et al., 2013; Harris et al., 2017; Horowitz et al., 2017; Levin & Currie, 2010; Raison & Harris, 2019; Wilson et al., 2016). To further validate this claim, four studies utilized interventions that specifically targeted parents/guardians to analyze the effectiveness of improved caregiver oral health literacy on their child(ren)'s oral health outcomes and hygiene behaviors (Dela Cruz et al., 2012; Duijster et al., 2015; Nakre & Harikiran, 2013; Wilson et al., 2016).

For example, as part of a randomized control trial (RCT), Wilson and colleagues (2016) evaluated American Indian caregiver oral health knowledge, attitudes, and beliefs in relation with their children's oral health behaviors, habits, and oral health status. 992 caregivers completed a Basic Research Factors Questionnaire (BRFQ) related to oral health literacy concepts, oral health behaviors, and presence of dental

conditions (such as dental caries). Results of this study concluded oral health knowledge was significantly associated with oral health attitudes; greater self-efficacy scores were significantly associated with behavioral adherence; and oral health behaviors were significantly associated with oral health status of children. Findings from this study emphasized the importance of addressing caregiver oral health knowledge, attitudes, and behaviors to improve children's oral health status (Wilson et al., 2016).

Theme Four: Oral Health-Related Quality of Life

Several studies (n=7) discussed the influence that poor oral health has on quality of life and the need to address oral health-related quality of life (OHRQoL) among at-risk populations (Bersell, 2017; Freeman et al., 2016; Harris, et al., 2017; Knorst et al., 2021; Kumar et al., 2014; Nakre & Harikiran, 2013; Wilson et al., 2016). Four studies evaluated OHRQoL for low-income children (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014; Wilson et al., 2016). Six studies analyzed health promotion programs' efforts to improve oral health literacy and its influence on oral health behaviors and OHRQoL (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014; Nakre & Harikiran, 2013; Wilson et al., 2016). The Child Perceptions Questionnaire (CPQ) was the most common quality of life measurement tool utilized with children. Additional quality of life assessments identified in the literature included The Early Childhood Oral Health Impact Scale (ECOHIS), the Child-Oral Impacts of Daily Performances (Child-OIDP), Family-Impact Scale, and the Oral Health Impact Profile (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014).

For example, Knorst et al. (2021) conducted a systematic review and meta-analysis among 139 cross-sectional and longitudinal studies to analyze the relationship between socioeconomic status (SES) and oral health-related quality of life (OHRQoL).

Among these 139 studies, 39 included children and 46 included adolescents. Results from this study found a significant positive relationship between SES and OHRQoL for all age groups. Authors of this study acknowledged that causal relationships cannot be claimed due to the methodology used in the included studies. However, the strong significance between SES and OHRQoL relationship encourages the need for public health policies and additional strategies to improve access to oral healthcare services, reduce health disparities, and improve quality of life across the lifespan (Knorst et al., 2021).

Discussion: Implications, Limitations, Recommendations and Conclusion

The purpose of this scoping review was to evaluate the existing evidence regarding the contextual supports and barriers to oral health services and hygiene practices for children and families of low socioeconomic status (SES). This scoping review provided a breadth and depth of knowledge related to the contextual factors this population experiences in accessing oral healthcare services, as well as utilizing these services and hygiene practices in their home environments. Twenty-three studies answered the scoping review question related to the population of low-income children and/or families, contextual factors, community-based oral health service delivery, and oral health education/literacy interventions and their influence on hygiene behaviors. The results of the scoping review revealed the importance of community-based oral healthcare service delivery and interdisciplinary oral health teams in improving access to oral healthcare services, as well as the significance of caregiver oral health literacy on child oral health-related quality of life. Findings from this scoping review can be used to inform oral healthcare services and education-based programs designed for children

and families of low socioeconomic status. Oral healthcare teams can incorporate implications from this review to improve access and utilization among the communities they serve.

Implications

This scoping review identified several strategies to improve access and utilization of oral healthcare services for children and families of low socioeconomic status. Dental professionals and allied health professionals can improve access and utilization for this population through establishing community partnerships, expanding the dental workforce, addressing caregiver oral health literacy, and measuring child oral health-related quality of life.

First, community-based oral health programs are an effective strategy to improve access to oral healthcare services for at-risk populations (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Davis & Plaspohl, 2017; Dela Cruz et al., 2012; Duijster, et al., 2015; Freeman et al., 2016; Haleem et al., 2016; Halonen et al., 2013; Horowitz et al., 2017; Kumar et al., 2014; Levin & Currie, 2010; Qadri et al., 2018; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016). Partnerships with existing community sites, social welfare programs, and school districts can support this initiative (Bersell, 2017; Biordi et al., 2015; Davis & Plaspohl, 2017; Dela Cruz et al., 2012; Duijster, et al., 2015; Halonen et al., 2013; Horowitz et al., 2017; Kumar et al., 2014; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016).

Second, successful preventive service delivery requires a collaborative, interdisciplinary approach (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Haleem et al.,

2016; Halonen et al., 2013; Horowitz et al., 2017; Qadri et al., 2018; Spetz et al., 2019). Dental professionals, pediatricians, nurse practitioners, and teachers can collaborate to address oral health with the children they serve (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Haleem et al., 2016; Halonen et al., 2013; Horowitz et al., 2017; Qadri et al., 2018; Spetz et al., 2019). Global health initiatives encourage allied health professionals to address oral health among individuals and communities (Bersell, 2017; Biordi et al., 2015; CDC, 2020, n.d.; Gold & Tomar, 2018; WHO, n.d.). This expansion requires allied health professionals to become educated about current oral health practices and train with dental providers in administering evidence-based preventive strategies, such as fluoride varnish applications and correct toothbrushing and flossing techniques (Bersell, 2017; Biordi et al., 2015). Allied health professionals also need to educate caregivers on the significance of oral health practices and proper oral care techniques to ensure clients incorporate preventive practices into their daily self-care routine (Bersell, 2017; Biordi et al., 2015; Horowitz et al., 2017).

Third, oral health programs can improve pediatric oral health by addressing child and caregiver oral health literacy (Angelopoulou et al., 2015; Biordi et al., 2015; Duijster et al., 2015; Freeman et al., 2016; Haleem et al., 2016; Halonen et al., 2013; Kumar et al., 2014; Levin & Currie, 2010; Nakre & Harikiran, 2013; Qadri et al., 2018; Raison & Harris, 2019; Spetz et al., 2019). Caregivers are an essential interdisciplinary team member in the provision of oral healthcare due to the significant influence they have on their child(ren)'s oral health status, behaviors, and quality of life (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017;

Duijster et al., 2015; Fisher-Owens et al., 2007; Halonen et al., 2013; Harris et al., 2017; Horowitz et al., 2017; Levin & Currie, 2010; Raison & Harris, 2019; Wilson et al., 2016). This requires oral health education programs to specifically target and integrate caregivers within their interventions (Dela Cruz et al., 2012; Duijster et al., 2015; Nakre & Harikiran, 2013; Wilson et al., 2016). Caregiver interviews and focus groups are a useful method to integrate families within programming and can lead to successful improvements in oral health based on the families' specific needs (Duijster et al., 2015; Horowitz et al., 2017).

Fourth, quality of life measures can inform intervention due to the significant impact poor oral health has on oral health-related quality of life (Bersell, 2017; Freeman et al., 2016; Harris, et al., 2017; Knorst et al., 2021; Kumar et al., 2014; Nakre & Harikiran, 2013; Wilson et al., 2016). Quality of life measurement tools -- Child Perceptions Questionnaire (CPQ), The Early Childhood Oral Health Impact Scale (ECOHIS), the Child-Oral Impacts of Daily Performances (Child-OIDP), Family-Impact Scale, and the Oral Health Impact Profile -- have been used to measure improvements in oral health literacy, oral health behaviors, and oral health status related to systemic health (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014). These measurement tools can be used at baseline and post-intervention to measure specific changes (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014).

Limitations

There were multiple limitations from this scoping review process and methodology that should be considered. Data collection and theme analysis were conducted using four databases throughout a four-week time frame by one reviewer.

Furthermore, exclusion criteria were not clearly set prior to data collection. Per Arksey and O'Malley's Scoping Review Guidelines (2005), future scoping reviews should exhaust the search using additional databases, incorporate peer review, establish clear exclusion criteria prior to data collection, and conduct the scoping review during an extended time frame.

Recommendations

Broader implications of this review acknowledge implementation strategies that may benefit individuals and communities across all age groups and income status (Haleem et al., 2016; Knorst et al., 2021; Qadri et al., 2018). However, due to the disparities that exist among low-income families, these strategies are designed to specifically target this population to reduce oral health disparities and improve their quality of life (CDC, n.d.; Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014; WHO, n.d.; Wilson et al., 2016). Implications and recommendations from this scoping review are in alignment with public health initiatives to improve access of oral healthcare services for vulnerable populations, especially low-income children (CDC, n.d.; WHO, n.d.). The results of this scoping review suggest oral healthcare teams partner with communities, expand the dental workforce, collaborate with allied health professionals, utilize validated oral health outcome measures, and integrate models and frameworks into interventions.

First, traditional and community-based oral healthcare teams can partner with existing community organizations and schools to deliver preventive oral healthcare services, as well as improve access of these services for families of low socioeconomic status (Bersell, 2017; Biordi et al., 2015; Davis & Plaspohl, 2017; Dela Cruz et al., 2012;

Duijster, et al., 2015; Halonen et al., 2013; Horowitz et al., 2017; Kumar et al., 2014; Raison & Harris, 2019; Spetz et al., 2019; Wilson et al., 2016). Second, oral healthcare teams should expand the dental workforce by educating allied health professionals about oral health current practices that these professionals can incorporate with the individuals, families, and communities they serve (Bersell, 2017; Biordi et al., 2015). Third, oral healthcare teams should collaborate with interdisciplinary team members in providing oral healthcare services and education. Caregivers are significant oral health team members and must be integrated into preventive and education programs to effectively improve the oral health of children (Angelopoulou et al., 2015; Bersell, 2017; Biordi et al., 2015; Chazin & Glover, 2017; Davis & Plaspohl, 2017; Duijster et al., 2015; Fisher-Owens et al., 2007; Halonen et al., 2013; Harris et al., 2017; Horowitz et al., 2017; Levin & Currie, 2010; Raison & Harris, 2019; Wilson et al., 2016). Fourth, oral health programs can use validated oral health-related quality of life assessment tools to gauge improvements in oral health knowledge, behaviors, and status among children and adolescents. (Freeman et al., 2016; Knorst et al., 2021; Kumar et al., 2014; Wilson et al., 2016). Last, community-based oral healthcare teams can incorporate ecological models, health behavior models, and community frameworks to guide oral health service delivery and education programs (Chazin & Glover, 2017; Fisher-Owens et al., 2007; Harris et al., 2017; Wilson et al., 2016).

This scoping review revealed efforts to effectively address oral health disparities among low-income families through community-based education- and preventive-based interventions to reduce oral health conditions, as well as support oral health behaviors (i.e. daily hygiene habits) and outcomes (i.e. child oral health-related quality of life).

Dental professionals and allied health professionals -- primary care physicians, therapy practitioners, community health workers, and teachers -- can implement recommendations to improve access to oral healthcare services, as well as empower families to utilize these services and implement oral hygiene behaviors within their communities and home environments. Future studies should evaluate the long-term effectiveness of these strategies on sustained improvements to access, utilization, hygiene behaviors, and quality of life.

Conclusion

The purpose of this scoping review was to evaluate the existing evidence in understanding the contextual supports and barriers influencing families of low socioeconomic status in accessing oral healthcare services and engaging in oral hygiene practices. Twenty-three studies met the inclusion criteria and answered the scoping review question related to the population of low-income children and/or families, contextual factors, community-based oral health service delivery, and oral health education/literacy interventions and their influence on hygiene behaviors. Important themes from this scoping review included the effectiveness of community-based oral healthcare service delivery and interdisciplinary oral health teams in improving access to oral healthcare services, as well as the significance of caregiver oral health literacy on child oral health-related quality of life.

Implications and recommendations derived from this scoping review are in alignment with public health initiatives that aim to reduce oral health disparities among vulnerable populations (CDC, n.d.; WHO, n.d.). Recommendations outlined from this review can be implemented within community-based oral healthcare services to

increase access and utilization of these services and hygiene practices by families of low socioeconomic status, as well as improve oral health literacy among this population and allied health professionals. Limitations noted from this scoping review include lack of generalizability, causal relationships, policy analysis, and peer review. Future research should attempt to mitigate the limitations observed in these studies and implement recommendations that promote oral health initiatives on an individual, system, and public policy level.

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Scoping Review Appendix A: Background

Rationale and Purpose

Children from low-income families experience limited access and affordability to dental care leading to an increased risk of developing dental caries and higher rates of untreated dental caries (Chestnutt, 2014; Gold & Tomar, 2018; WHO, n.d.a). Untreated dental caries are associated with poor oral health, tooth decay, pain, and discomfort (Blake et al., 2015; Nota et al., 2019). These symptoms negatively impact the child's participation and performance in school-related activities, eating and sleep, play, and socialization (Blake et al., 2015; Chestnutt, 2014; Stein et al., 2012).

Low-income families in Minnesota reflect the same oral health disparities prevalent at the global level (MN Department of Health, n.d.a,b,c.; WHO, n.d.a). According to the Minnesota Department of Health (n.d.a.) these disparities are “largely due to barriers of limited access to and availability of oral health services, lack of awareness of the need for care, oral health literacy, [and] cost or fear of dental procedures”. The Minnesota Department of Health initiatives, to increase access to oral healthcare services and reduce the oral health disparities among children of low SES, align with national and global population health goals (Blake et al., 2015; Healthy People 2030, n.d.; MN Department of Health, n.d.d; WHO, n.d.a).

The purpose of this scoping review is to understand the contextual supports and barriers to oral health services and hygiene practices of low-income families in order to best inform healthcare delivery for both community-based oral healthcare teams and traditional dental clinics and then educate the dental healthcare team at Ready, Set, Smile to better serve children and families within the Minneapolis school districts. The

knowledge acquired from the scoping review will be used to identify and advocate for the occupational therapist's role as a collaborative and consultative oral healthcare team member at a community partner named Ready, Set, Smile. The overall goal for the capstone type is for the profession of occupational therapy (OT) to become a part of oral healthcare and primary care teams across various community-based organizations and traditional dental clinics (de Sam Lazaro, n.d.).

This topic aligns with OT professional and inter-professional priorities for research and knowledge translation in the following ways:

- Improving access to oral healthcare and preventive services (Healthy People 2030, n.d.; HHS, n.d.; WHO, n.d.a).
- Providing preventive services for chronic conditions to improve population health outcomes and reduce disparities experienced by vulnerable populations (AOTA & AOTF, 2011; AOTF, n.d.; Healthy People 2030, n.d.; HHS, n.d.; WHO, n.d.a,b.).
- Evaluating environmental supports and barriers on health outcomes and participation in daily life activities (AOTA & AOTF, 2011; HHS, n.d.; WHO, n.d.b.).
- Assessing the effectiveness of occupational therapy interventions to support participation in everyday life (Alvarez, 2018; AOTA & AOTF, 2011).

Significance and Innovation

Improving access to oral healthcare services for low-income families is the primary focus of local, national, and global population health initiatives (Blake et al., 2015; Chestnutt, 2014; Healthy People 2030, n.d.; HHS, n.d.; MN Department of Health,

n.d.c; WHO, n.d.a.). Although improvements have been made to increase access to oral healthcare, the rate of children and low-income families who do not utilize these services continues to increase (Blake et al., 2015; HHS, n.d.; MN Department of Health, n.d.b, c, d.; Ready, Set, Smile, 2020; WHO, n.d.a.). To help address this health and wellness need occupational therapists may be beneficial for improving *both* access and utilization of oral healthcare services and daily oral health hygiene practices (Anderson et al., 2020; Gold & Tomar, 2018; Iwao et al., 2019). Occupational therapy practitioners have the knowledge and skills to educate oral healthcare teams about the barriers that exist for low-income families, as well as advocate for their role in addressing these barriers (Anderson et al., 2020; A. Torre, G. Green, H. Oldenburg, R. McPherson, S. de Sam Lazaro, personal communication, May 19, 2021).

Occupational therapy is an emerging profession in dental care and are uniquely qualified to consult and collaborate with oral healthcare teams (Anderson et al., 2020; de Sam Lazaro, n.d.). Oral health hygiene is within OT's scope of practice as an activity of daily living (ADL) to support “cleaning mouth; brushing and flossing teeth; removing, cleaning, and reinserting dental orthotics and prosthetics” (AOTA, 2020, p.30).

Occupational therapists can bring about beneficial change for low-income families by educating about the importance of oral health on engagement in daily activities; analyzing personal and contextual supports and barriers; incorporating occupation-based interventions catered to the families' specific needs, values, and literacy levels; and conducting activity analyses to identify areas of improvements addressed through adaptive strategies, rehabilitative opportunities, and behavioral change (AOTA, 2020; Anderson et al., 2020; de Sam Lazaro, n.d.; Stein et al., 2012).

Background

Community-based service delivery models have been adopted by local, national, and global population health organizations in order to improve access of oral healthcare services for low-income families (Blake et al., 2015; Healthy People 2030, n.d.; MN Department of Health, n.d.a; WHO, 2020). Literature shows that community-based models have improved access to oral healthcare, as well as shown improvements in children and caregivers' oral health knowledge, skills, daily hygiene practices, and oral health outcomes (Blake et al., 2015; Gold & Tomar, 2018; MN Department of Health, n.d.a.). Minnesota Department of Health initiatives encourage dental healthcare teams to adopt community-based models to continue to improve access to services and reduce oral healthcare disparities among at risk populations (MN Department of Health, n.d.a, d.). Ready, Set, Smile is one example of a dental health organization who has adopted this model to provide preventive services within each of the child's natural environments, including in the home, daycares, schools, and community centers (Ready, Set, Smile, 2020, n.d.a).

Ready, Set, Smile is a non-profit, community-based organization dedicated to addressing the oral health needs of children and families within low-income school districts in Minneapolis (Ready, Set, Smile, 2020, n.d.a). Their mission is to use education and preventive services to “prepare and empower all children in [the Minneapolis] community to care for their oral health” (Ready, Set, Smile, n.d.b.). Their vision is that “Every child in [the Minneapolis] community will have an opportunity to be free of dental disease” (Ready, Set, Smile, n.d.b.). The Ready, Set, Smile team of dental and community health professionals partner with caregivers and school staff to

educate, screen, and treat children who are at risk of poor oral health (Ready, Set, Smile, 2020, n.d.b). Ready, Set, Smile incorporates motivational interviewing within the education family programs and preventive service delivery to improve oral health behaviors. Their Co-Founder, Adele Della Torre, D.D.S., has outlined goals for the continued partnership with St. Catherine University's Occupational Therapy Program to:

- Improve effectiveness of family programming on oral health hygiene practices and oral health outcomes for each family member;
- Evaluate methods in educating families about oral health hygiene;
- Reduce oral health disparities through addressing barriers to oral healthcare services and daily hygiene practices;
- Collaborate with OT professionals about ways to improve oral health outcomes and behaviors for children and their caregivers (A. Torre, G. Green, H. Oldenburg, R. McPherson, S. de Sam Lazaro, personal communication, May 19, 2021).

To help support this scoping review, two models will be used to guide the process. First, the Person-Environment-Occupation-Performance (PEOP) model will be used to guide the Ready, Set, Smile team (and other oral healthcare teams) through contextual analysis and interventions to support performance in oral health practices. The PEOP model is used to promote health and well-being through addressing personal, environmental, and occupation-based supports and barriers (Cole & Tufano, 2008). The PEOP model was developed by occupational therapists and has been used across the lifespan to promote health and well-being through addressing intrinsic and extrinsic factors (Cole & Tufano, 2008).

Second, the Health Belief Model (HBM) will be utilized to evaluate children and families' readiness to change current behaviors, while promoting self-efficacy of positive oral health hygiene habits and routines. The Health Belief Model was originally developed by public health professionals to encourage health behavior change (Reitz & Graham, 2019). The main constructs of this theory analyze perceived benefits and barriers to health behavior change and incorporate motivational interviewing techniques to support readiness to change and improve self-efficacy related to health behavior (Reitz & Graham, 2019). This theory can be used with Ready, Set, Smile and additional oral healthcare teams to analyze personal and contextual supports and barriers to oral health hygiene.

The Health Belief Model and the Person-Environment-Occupation-Performance (PEOP) model are used globally to promote health and well-being (Cole & Tufano, 2008; Reitz & Graham, 2019). The HBM and PEOP model incorporate motivational interviewing to promote oral health among low-income families (Cole & Tufano, 2008; Reitz & Graham, 2019). The use of the HBM and PEOP model in this scoping review will allow the Ready, Set, Smile team to improve intervention and family programming by addressing contextual barriers, as well as incorporating motivational interviewing to support positive oral hygiene habits.

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Scoping Review Appendix B: Primary Search Process and Results

Table 2.

PubMed Search History (06/18/2021)

| Filters / Years | Keywords | Total Yield / Relevant Hits |
|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 2000-2021 | ("Oral Health"[Mesh]) AND "Social Class"[Mesh] | 555/-- *refine search |
| 2000-2021 Clinical Trial Meta-Analysis Randomized Control Trial Review Systematic Review | ("Oral Health"[Mesh]) AND "Social Class"[Mesh] | 27/15 |
| 2016-2021 | ((("Oral Health"[Mesh]) AND ("Social Environment"[Mesh] OR "Health Facility Environment"[Mesh] OR "Environment and Public Health"[Mesh] OR "Built Environment"[Mesh] OR "Public Health"[Mesh])) AND "Social Class"[Mesh] | 106/-- *refine search |
| 2016-2021 Clinical Trial Meta-Analysis Randomized Control Trial Review Systematic Review | ((("Oral Health"[Mesh]) AND ("Social Environment"[Mesh] OR "Health Facility Environment"[Mesh] OR "Environment and Public Health"[Mesh] OR "Built Environment"[Mesh] OR "Public Health"[Mesh])) AND "Social Class"[Mesh] | 11/8 |
| 2016-2021 | ("Dental Care"[Mesh]) AND ("Cultural Deprivation"[Mesh] OR "Primary Health Care"[Mesh] OR "Cultural Competency"[Mesh] OR "Social Norms"[Mesh] OR "Social Environment"[Mesh]) | 155/-- *refine search |
| 2016-2021 Clinical Trial Meta-Analysis Randomized Control Trial Review Systematic Review | ("Dental Care"[Mesh]) AND ("Cultural Deprivation"[Mesh] OR "Primary Health Care"[Mesh] OR "Cultural Competency"[Mesh] OR "Social Norms"[Mesh] OR "Social Environment"[Mesh]) | 22/8 |
| 1980-2021 | ((("Oral Hygiene"[Mesh]) AND ("Environmental Science"[Mesh] OR "Motivation"[Mesh])) AND "Social Class"[Mesh] | 16/6 |

2016-2021

("Oral Hygiene"[Mesh]) AND (
"Health Status Disparities"[Mesh]
OR "Healthcare
Disparities"[Mesh])

14/6

Table 3.

CINAHL Search History (06/22/2021)

| Filters / Years | Keywords | Total Yield / Relevant Hits |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Apply equivalent subjects | oral health AND low income families AND (barriers and facilitators) | 1/1 |
| Apply equivalent subjects | (oral health or oral hygiene or dental health or dental care or oral care) AND (barriers or obstacles or challenges or difficulties or issues or problems) AND (low income or poverty or low socioeconomic status) | 344/-- *refine search |
| Apply equivalent subjects Scholarly peer-reviewed journals All child USA | (oral health or oral hygiene or dental health or dental care or oral care) AND (barriers or obstacles or challenges or difficulties or issues or problems) AND (low income or poverty or low socioeconomic status) | 52/21 |

Appendix C: Primary Search Literature Matrix

| REF. (APA) | Article Type | Publication Type | Purpose/Aim/Question(s) | Methods | Results | Conclusion /Limitations |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Evidence | | | | | | |
| <p>Conrad, D. A., Milgrom, P., Du, Y., Cunha-Cruz, J., Ludwig, S., & Shirtcliff, R. M. (2021). Impacts of innovation in dental care delivery and payment in Medicaid managed care for children and adolescents. <i>BMC health services research</i>, 21(1), 565. https://doi-org.pearl.stkate.edu/10.1186/s12913-021-06549-3</p> | <p>Original research article</p> <p>Level II: Randomized Control Trial (RCT)</p> | <p>Peer-reviewed, scholarly journal</p> <p>Randomized Controlled Trial</p> | <p>“In this paper, we examine the quality improvement initiative of one DCO that developed a hub and spoke model in rural areas where it had substantial market penetration. This study analyzes intervention effects on utilization and cost of dental services for children and adolescents. This intervention, The Population-centered Risk- and Evidence-based Dental Interprofessional Care Team (PREDICT), was part of the Robert Wood Johnson Foundation Finding Answers: Solving Disparities through Payment and Delivery System Reform program” (p. 2).</p> | <p>“Counties were randomly assigned to either the intervention (PREDICT) or control group. Using Medicaid administrative data, difference-in-difference regression models were used to estimate PREDICT intervention effects (formally, “average marginal effects”) on dental care utilization and costs to Medicaid, controlling for patient and county characteristics” (p. 1)</p> | <p>“Average marginal effects of PREDICT on expected use and expected cost of services per patient (child or adolescent) per quarter were small and insignificant for most service categories. There were statistically significant effects of PREDICT ($p < .05$), though still small, for certain types of service: (1) Expected number of diagnostic services per patient-quarter increased by .009 units; (2) Expected number of sealants per</p> | <p>“The major hypothesis that primary dental care (selected preventive services and diagnostic services in general) would increase significantly over time in PREDICT counties relative to controls was supported. There were small but statistically significant, increases in differential use of diagnostic services and sealants. Total cost per beneficiary rose modestly, but restorative and dental costs did not. The findings suggest favorable developments within PREDICT counties in enhanced preventive and diagnostic procedures, while holding the line on expensive, restorative and extraction procedure” (p. 1).</p> |

| | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | <p>patient-quarter increased by .003 units, and expected cost by \$0.06; (3) Total expected cost per patient-quarter for all services increased by \$0.64. These consistent positive effects of PREDICT on diagnostic and certain preventive services (i.e., sealants) were not accompanied by increases in more costly service types (i.e., restorations) or extraction” (p. 1).</p> | |
| <p>Davies, G. M., Duxbury, J. T., Boothman, N. J., & Davies, R. M. (2007). Challenges associated with the evaluation of a dental health promotion programme in a deprived urban area. <i>Community dental health, 24</i>(2), 117–121.</p> | <p>Original research article</p> <p>Level I: Systematic review</p> | <p>Scholarly journal Review</p> | <p>“This review aimed to identify strategies to increase access to oral health services that will be useful in moving toward the LHI objectives” (p. 117).</p> | <p>“Preliminary research was conducted on the LHI via the Healthy People 2020 website. Health-related, peer-reviewed articles were selected and evaluated to determine current strategies used to increase access to oral health services</p> | <p>“Evidenced-based literature shows that economic, educational, and personal barriers prevent access to oral health services. Through health promotion and</p> | <p>“Since primary prevention and early intervention procedures lead to improved oral health, such methods can be useful in reaching the LHI objectives and the target goal of Healthy People 2020” (p. 117).</p> |

| | | | | | | |
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| | | | | that would lead to achievement of the LHI objectives” (p. 117). | educational interventions, however, good oral health can be established. Such improvements will lead to attaining the LHI objectives in moving towards the target goals of Healthy People 2020” (p. 117). | |
| Dela Cruz, A., Mueller, G., Milgrom, P., & Coldwell, S. E. (2012). A Community-based Randomized Trial of Postcard Mailings to Increase Dental Utilization Among Low-income Children. <i>Journal of Dentistry for Children</i> , 79(3), 154–158. | Original research article Level II: RCT | International scholarly journal Randomized Controlled Trial | “Increasing awareness about the importance of preventive dental care among low income families has been considered to be key to overcoming nonfinancial access to care barriers for children. The purpose of this randomized, controlled trial was to measure the impact of postcard mailings on dental utilization by low-income children through a dental society program designed to increase access to dental care” (p. 1). | “Five thousand eight hundred and seven low-income 2- to 4-year-olds were randomly assigned to 1 of 3 groups: (1) Group 1 (N=2,014) received postcards containing information on how to enroll in the Yakima County Access to Baby and Child Dentistry program; (2) Group 2 (N=2,014) received the enrollment information as well as additional information on the availability of fluoride varnish and the need to visit the dentist by the age of 1-year-old; and (3) Group 3 (N=1,779) did | “Preventive services utilization rates were not different among the groups: 61% for Group 1, 62% for Group 2, and 60% for Group 3, although rates were high for a Medicaid population” (p. 1). | “Postcard mailings did not significantly increase utilization of preventive dental services. Other strategies to increase utilization of preventive oral health measures are needed” (p. 1). |

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| | | | | not receive postcards” (p. 1). | | |
| <p>Finlayson, T.L., Cabudol, M., Liu, J.X. <i>et al.</i> A qualitative study of the multi-level influences on oral hygiene practices for young children in an Early Head Start program. <i>BMC Oral Health</i> 19, 166 (2019). https://doi.org/10.1186/s12903-019-0857-7</p> | <p>Original research article</p> <p>Level VI: Qualitative study</p> | <p>Peer-reviewed, scholarly journal</p> <p>Interviews</p> | <p>“The aim of this study was to better understand how and where to intervene and support optimal oral hygiene practices, defined as twice daily toothbrushing with an age-appropriate amount of fluoridated toothpaste, using a qualitative design” (p. 3).</p> | <p>“Twenty-four semi-structured interviews were conducted with mothers of children under 4 years old, enrolled in the home visitor (HV) component of one EHS program in Los Angeles, CA, who participated in the Behavioral Economics for Oral health Innovation pilot study (BEECON) in 2016–7. Audio-recordings of interviews were translated if needed, and transcribed in English, and coding and analysis was facilitated by Dedoose qualitative software. This investigation used general thematic analysis guided by the Fisher-Owens child oral health conceptual framework to identify influences on oral hygiene behaviors for the young children” (p. 1).</p> | <p>“Many mothers reported brushing their children’s teeth twice/day, and concern that most children frequently resisted brushing. They identified children being sick or tired/asleep after outings as times when brushing was skipped. Several child-, family-, and community-level themes were identified as influences on child oral hygiene behaviors. At the child-level, the child’s developmental stage and desire for independence was perceived as a negative influence. Family-level influences</p> | <p>“Child-, family- and community-level factors are important to consider to inform the development of tailored oral health preventive care programs for families in EHS-HV programs” (p. 2).</p> |

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| | | | | | <p>included the mother's own oral hygiene behaviors, other family role models, the mother's knowledge and attitudes about child oral health, and mothers' coping skills and strategies for overcoming challenges with brushing her child's teeth. Overall, mothers in the EHS-HV program were highly knowledgeable about ECC risk factors, including the roles of bacteria and sugar consumption, which motivated regular hygiene behavior. At the community-level, mothers discussed opportunities to connect with</p> | |
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| | | | | | other EHS-HV families during parent meetings and playgroups that HV coordinated. A few mothers noted that ESHV playgroups included brushing children's teeth after snacking, which can be a potential positive influence on children's hygiene practices" (p. 1). | |
| Foley, M., & Akers, H. F. (2019). Does poverty cause dental caries?. <i>Australian dental journal</i> , 64(1), 96–102. https://doi-org.pearl.stkate.edu/10.1111/adj.12666 | Original research article Level VII: Literature review | Peer-reviewed, scholarly journal Review | "The authors use literature review to argue for both a greater awareness of the upstream socio-economic causes of dental caries, and action from key community sectors to redress the societal inequalities contributing to dental health inequalities" (p. 96). | N/A | N/A | "Health professionals should always ask why a patient suffers from dental caries and other diseases. However, societies are remiss if they fail to also ask why some groups suffer poorer dental and general health, and investigate and address the socio-economic drivers for health inequalities. Hippocrates would expect no less of us" (p. 101). |
| Harris, R. V., Pennington, A., & Whitehead, M. (2017). Preventive dental | Original research article | Peer-reviewed, | "The aim of this article is to report a systematic review of theories of healthcare seeking concerned with | "Electronic searching identified 8947 titles and abstracts. Paper | "We theorize that at the individual | "Socioeconomic inequalities in early dental visiting emerge from several stages |

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| <p>visiting: a critical interpretive synthesis of theory explaining how inequalities arise. <i>Community dentistry and oral epidemiology</i>, 45(2), 120–134. https://doi-org.pearl.stkate.edu/10.1111/cdoe.12268</p> | <p>Level I: Systematic Review</p> | <p>scholarly journal Review</p> | <p>explaining SES differences in preventive dental visiting, based on the review question ‘What mechanisms are theorized to bring about SES inequalities in preventive dental visiting?’” (p. 121).</p> | <p>screening and citation snowballing left 77 included papers. Drawing on the tenets of Critical Interpretive Synthesis, data extraction involved capturing concepts and relationships and translating these sometimes into synthetic constructs” (p. 120).</p> | <p>(micro-level), dental visiting behaviour is influenced by: the ‘Importance of obtaining care’, ‘Emotional response’ and ‘Perceived control’, which feed into a balancing of ‘Competing Demands’ against ‘Internal resources’ (coping, self-identity), although attendance is tempered by the effective ‘Affordability and Availability of services’. Positive Care experiences are theorized to lower the demands and increase internal resources associated with dental visiting. We also outline meso-level factors ‘Social</p> | <p>in the care-seeking process. Dental visiting behaviour should be viewed not just as a one-off event but extending over time and social space. Since there is recursivity in peoples’ most recent dental experience any future visits we identify that interventions which make care a positive experience for low socioeconomic patients may be particularly beneficial in reducing inequalities” (p. 120).</p> |
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| | | | | | norms and sanctions', 'Obligations, expectations and trust', 'Information channels', 'Social structures' and theorize how these can exert an overwhelming influence in deprived areas" (p. 120). | |
| Horowitz, A. M., Kleinman, D. V., Child, W., & Radice, S. D. (2017). Perceptions of Dental Hygienists and Dentists about Preventing Early Childhood Caries: A Qualitative Study. <i>Journal of Dental Hygiene</i> , 91(4), 29–36. | Original research article Level VI: Qualitative Study | Peer-reviewed, scholarly journal Interviews | "The objective of this qualitative pilot study was to gain an in-depth understanding of dental hygienists and dentists perspectives regarding children's oral health and what needs to be done to prevent early childhood caries (ECC), the most frequent chronic disease of childhood" (p. 29). | "A skilled facilitator conducted four focus groups and four phone interviews with 20 dental hygienists and 17 dentists practicing in a variety of locations within the state of Maryland. The interview guide was based on results from previous state-wide surveys of dental hygienists and dentists. Sessions were recorded, transcribed, and reviewed by the PI and facilitator. Qualitative content analysis was used to identify and manually code themes" (p. 29). | "Focus groups and interviews provided rich and insightful information for strategies to help solve the ECC problem in Maryland, which supplemented the earlier quantitative mail survey data. Three key themes emerged: challenges to preventing ECC among low-income families; necessary educational | "Current approaches to educating low-income adults about caries prevention are insufficient to prevent ECC and dental care providers cannot accomplish this goal alone. Ensuring that all dental care providers have a science-based understanding of caries prevention is critical. Integrating science-based oral health preventive care into medical and nursing undergraduate programs could increase providers' knowledge and confidence towards incorporating oral health into patient care plans; improve the oral health literacy of providers and patients; and improve patient oral health outcomes" (p. 29). |

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| | | | | | <p>methods and practices; and, the need for inter-professional collaboration. Discussions focused on issues related to educating parents with low oral health literacy about how to prevent ECC and the value of including non-dental health care providers, such as pediatricians and school nurses, in the caries prevention process” (p. 29).</p> | |
| <p>Huebner CE, Riedy CA, Huebner, C. E., & Riedy, C. A. (2010). Behavioral determinants of brushing young children’s teeth: implications for anticipatory guidance. <i>Pediatric Dentistry</i>, 32(1), 48–55.</p> | <p>Level VI: Qualitative Study</p> | <p>Scholarly journal Interviews</p> | <p>“The purposes of this study were to identify parents' motivation, support, and barriers to twice daily tooth-brushing of infants and preschool-age children and to discover new approaches to encourage this important health behavior” (p. 48).</p> | <p>“Qualitative interviews were conducted with 44 rural parents about tooth-brushing habits and experiences” (p. 48).</p> | <p>“Forty of 44 parents reported that they had begun to brush their child's teeth; 24 (55%) reported brushing twice a day or more. Parents who brushed twice a day, vs less often, were</p> | <p>“The findings support an integrative framework in which barriers and support for parents' twice daily brushing of their young children's teeth are multiple and vary among individuals. Knowledge of behavioral determinants specific to individual parents could strengthen anticipatory guidance and recommendations about at-</p> |

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| | | | | | <p>more likely to describe specific skills to overcome barriers; they expressed high self-efficacy and held high self-standards for brushing. Parents who brushed their children's teeth less than twice daily were more likely to: hold false beliefs about the benefits of twice daily tooth-brushing; report little normative pressure or social support for the behavior; have lower self-standards; describe more external constraints; and offer fewer ideas to overcome barriers" (p. 48).</p> | <p>home oral hygiene of young children" (p. 48).</p> |
| Knorst, J. K., Sfreddo, C. S., de F Meira, G., Zanatta, F. B., Vettore, | Original research article | Scholarly journal | "To systematically review observational studies assessing the association between | "Electronic searches were performed in the PubMed, Embase, | "The search strategy retrieved 6114 | "Individuals of low SES had poorer OHRQoL, regardless of the country's economic |

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| <p>M. V., & Ardenghi, T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. <i>Community dentistry and oral epidemiology</i>, 49(2), 95–102. https://doi-org.pearl.stkate.edu/10.1111/cdoe.12616</p> | <p>Level I: Systematic Review</p> | <p>Review</p> | <p>socioeconomic status (SES) and oral health-related quality of life (OHRQoL) in children, adolescents and adults” (p. 1).</p> | <p>Web of Science, LILACS and Scopus databases for articles published up to September 2020. Two independent reviewers performed the search and critical appraisal of the studies. The inclusion criteria were observational studies that evaluated the effect of SES on the OHRQoL in all age groups using validated methods. Quality assessment was conducted using the Newcastle-Ottawa Scale. Data were extracted for meta-analysis followed by a meta-regression analysis. A random-effects model was used to estimate the pooled calculate prevalence ratio (PR) and respective 95% confidence intervals (CI) for each study” (p. 1).</p> | <p>publications. Some 139 articles met the eligibility criteria and were included in the systematic review. Of those, 75 were included in the general meta-analysis they represented a total sample of 109 269 individuals. People of lower SES had worse OHRQoL (PR 1.30; 95% CI 1.26-1.35). In the meta-analyses of different subgroups, an association was found between low SES and worse OHRQoL in countries of all economic classifications, in all age groups and irrespective of the socioeconomic indicator used.</p> | <p>classification, SES indicator and age group. Public policies aiming to reduce social inequalities are necessary for better OHRQoL throughout life” (p. 1).</p> |
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| | | | | | A socioeconomic gradient in OHRQoL was also observed, in which the lower the individuals' socioeconomic position, the poorer their OHRQoL" (p. 1). | |
| Levin, K. A., & Currie, C. (2010). Adolescent toothbrushing and the home environment: sociodemographic factors, family relationships and mealtime routines and disorganisation. <i>Community dentistry and oral epidemiology</i> , 38(1), 10–18. https://doi-org.pearl.stkate.edu/10.1111/j.1600-0528.2009.00509.x | Original research article Level V: Survey data | Peer-reviewed, scholarly journal Dataset/statistics | "Previous studies have shown that sociodemographic factors are associated with adolescent toothbrushing. While there has been some investigation of parental modelling of oral health behaviour and the association between parental support and oral health, there has been no investigation of the home environment and its effect on oral health behaviour. The current study examines variables related to the family, including mealtime routines and family relationships to determine the best predictors of adolescent toothbrushing" (p. 10). | "Data from the 2006 Health Behaviour in School-Aged Children Survey were modelled using logistic univariate and multivariable modelling with outcome variable twice-a-day toothbrushing" (p. 10). | "Higher family socioeconomic and affluence were significantly associated with greater odds of toothbrushing twice a day or more. Family structure was also significantly associated with girls' toothbrushing. However, under the multivariable model, eating breakfast was found to be the best predictor of twice-a-day toothbrushing among boys and girls. The | "The study shows that the family and home environment should play a central role in the promotion of oral health, through mealtime routines, incorporating a fair parenting style and developing open and positive family relationships. Not only are these strongly associated with twice a day toothbrushing but, unlike sociodemographic factors, they may be relatively easy to adopt" (p. 10). |

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| | | | | | next best predictor of boys' toothbrushing was eating family meals and of girls' toothbrushing, never going to bed hungry, followed by family affluence for both boys and girls. Under the multivariable model, family structure was no longer significantly associated with girls' toothbrushing" (p. 10). | |
| Locker D. (2000). Deprivation and oral health: a review. <i>Community dentistry and oral epidemiology</i> , 28(3), 161–169. https://doi-org.pearl.stkate.edu/10.1034/j.1600-0528.2000.280301.x | Original research article Level VII: Literature review | Scholarly journal Review | "This paper reviews epidemiological research linking deprivation and oral health" (p. 161). | "Four types of study are identified and described: simple descriptive, comparative, analytic and explanatory" (p. 161). | "These studies confirm that deprivation indices are sensitive to variations in oral health and oral health behaviours and can be used to identify small areas with high levels of need for dental treatment and | "Deprivation measures have a major role to play in research that examines features of people and places, and how they promote and/or damage both oral and general health" (p. 161). |

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| | | | | | <p>oral health promotion services. As such, they are likely to provide a useful administrative tool. In terms of research, the studies demonstrate that these measures provide a ready way of controlling for socio-economic status in studies examining the association between oral health and other variables. However, this research, in largely replicating previous studies using social class, does not address fundamental issues concerning the mechanisms which link social</p> | |
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| | | | | | inequality and health" (p. 161). | |
| Northridge, M. E., Schrimshaw, E. W., Estrada, I., Greenblatt, A. P., Metcalf, S. S., & Kunzel, C. (2017). Intergenerational and Social Interventions to Improve Children's Oral Health. <i>Dental clinics of North America</i> , 61(3), 533–548. https://doi-org.pearl.stkate.edu/10.1016/j.cden.2017.02.003 | Original research article Level VII: Literature review | Scholarly journal Review | "Dental providers ought to be aware of interventions to prevent oral disease and promote oral health that begin with effective intergenerational and social interventions, which are the focus of this review" (p. 2). | N/A | N/A | "Finally, it is imperative that effective interventions are described in such a way that they may be replicated or assessed for suitability for use in other contexts, as per the constructs of the Consolidated Framework for Implementation Research.41 Without losing effective components of the interventions, available information must enable adaptations to be performed to suit community needs" (p. 9). |
| Ponce-Gonzalez, I., Cheadle, A., Aisenberg, G. <i>et al.</i> Improving oral health in migrant and underserved populations: evaluation of an interactive, community-based oral health education program in Washington state. <i>BMC Oral Health</i> , 19, 30 (2019). https://doi.org/10.1186/s12903-019-0723-7 | Original research article Level VI: Qualitative study | Peer-reviewed, scholarly journal Interviews | "Oral health is one of the greatest unmet health needs of migrant farmworkers and many migrant workers lack basic oral health knowledge. This paper presents evaluation results for an oral health education program designed to both increase knowledge concerning oral health practices and to gain a better understanding of the knowledge, attitudes and behaviors regarding oral health among migrant workers" (p. 1). | "We used a pre-post uncontrolled design to assess the impact of the education program on participant knowledge about oral health practices. Changes in knowledge were assessed using a paper and pencil survey given to participants before the session began (pre) and at the end of the session (post). The pre-post survey was supplemented by qualitative information in the form of participant self- | "There were 311 participants in 12 workshops held in 2017 throughout Washington State. There were statistically significant increases in knowledge for all of the pre/post survey questions. Questions with particularly large improvements included: the | "An interactive, lay-led oral health education program can be an effective way to increase oral health knowledge in migrant populations. Recommendations for similar programs include using interactive approaches to engage participants, being open to learning and changing your own thinking, and using lay leaders for the education sessions" (p. 1). |

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| | | | | reported barriers and facilitators, and figure drawings illustrating their feelings about the state of their own oral health” (p. 1). | results of having a mouth infection, factors causing oral health problems, and whether children in low-income families experience more tooth decay” (p. 1). | |
| Qadri, G., Alkilzy, M., Franze, M., Hoffmann, W., & Splieth, C. (2018). School-based oral health education increases caries inequalities. <i>Community dental health, 35</i> (3), 153–159. https://doi-org.pearl.stkate.edu/10.1922/CDH_4145Qadri07 | Original research article Level II: RCT | Scholarly journal Randomized Controlled Trial | “To evaluate the effect of one and half years of an oral health promotion program in primary schools” (p. 153). | “General and oral health education was provided to the teachers in the intervention schools, which they conveyed to their students. No additional measures were conducted in the control schools. Medical and dental school examinations, regression models” (p. 153). | “A significant incident rate reduction between caries increment was found, with a 35% higher risk in the control group. However, parents’ socioeconomic characteristics modified the effect of the program on their children as high socioeconomic status in the intervention group was associated with 94% reduction in the incidence risk ratio (p < 0.001)” (p. 153). | “The program was effective in improving dental health among students with higher socio-economic status. No preventive effect could be found in low socio-economic status groups” (p. 153). |

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| <p>Raison, H., & Harris, R. V. (2019). Interventions to reduce socio-economic inequalities in dental service utilisation - a systematic review. <i>Community dental health</i>, 36(1), 39–45. https://doi-org.pearl.stkate.edu/10.1922/CDH_4306Raison07</p> | <p>Original research article</p> <p>Level I: Systematic review</p> | <p>Peer-reviewed, scholarly journal</p> <p>Review</p> | <p>“We aimed to undertake a systematic review of interventions to reduce SES differences in dental visiting” (p. 39).</p> | <p>“Interventions limited to those influencing dental service use by adults. Any type of experimental design, investigating interventions aiming to reduce SES inequalities in dental service use, was included. Primary outcome was a measure of dental utilization” (p. 39).</p> | <p>“Electronic search of 8 databases, with citation snowballing, identified 14,396 titles and abstracts. Paper eligibility screening identified 63 full papers, of which 6 met the inclusion criteria. All included studies were conducted in the United States. Of these, three were targeted to parents, and two towards pregnant women. Two studies incorporated mailing postcards as (at least) one component of the intervention, although results were mixed. Another three studies included scheduling</p> | <p>“Evidence in this area is limited and results are mixed. More work is needed to investigate the effectiveness of interventions to reduce SES inequalities, especially in different healthcare systems and involving a wider participant range” (p. 39).</p> |
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| | | | | | <p>dental appointments as part of a multi-component approach, again with mixed results. The remaining study, involving community health advisors undertaking activities aimed at raising community awareness, found no significant intervention effect" (p. 39).</p> | |
| <p>Reich, S. M., Ochoa, W., Gaona, A., Salcedo, Y., Espino Bardales, G., Newhart, V., Lin, J., & Díaz, G. (2019). Disparities in Caregivers' Experiences at the Dentist With Their Young Child. <i>Academic Pediatrics, 19</i>(8), 969–977. https://doi-org.pearl.stkate.edu/10.1016/j.acap.2019.03.006</p> | <p>Original research article</p> <p>Level VI: Qualitative study</p> | <p>Peer-reviewed, scholarly journal</p> <p>Interviews</p> | <p>"To understand the experiences of diverse families when taking their young children to the dentist and to document their prevalence" (p. 969).</p> | <p>"An exploratory sequential design was used. First, 4 focus groups (N = 33) comprised of low income female caregivers of children under 6 years of age were conducted in English and Spanish. Discussions centered around facilitators and barriers to taking children to the dentist. Themes derived from the groups were then used to create a survey that was given to 1184 caregivers in</p> | <p>"Thematic coding of focus groups found little support for typically reported barriers to pediatric oral health care utilization (e.g., transportation, cost, knowledge); instead, caregivers reported negative experiences (e.g., restraint,</p> | <p>"Families with lower incomes and/or from ethnic and linguistic minority groups were more likely to report negative experiences at the dentist than higher income and Caucasian families. These data document the high prevalence of negative experiences and suggest ethnic, financial, and linguistic disparities in the quality of experiences. More research is needed on the role of dentists in facilitating or hindering oral health care utilization among diverse families" (p. 969).</p> |

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| | | | | English, Spanish, or Vietnamese" (p. 969). | separation) as barriers. In the surveys, 66% of caregivers reported being separated from their children, 25% reported that their children were restrained (53.7% for cleanings), 26% of children were given sedating medication for cleanings, and 22% of the caregivers reported experiences that made them not want to return to the dentist. The prevalence of these experiences differed significantly among Latino, Asian, and Caucasian families and for annual incomes under or above \$50,000" (p. 969). | |
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| <p>Spetz, J., Pourat, N., Chen, X., Lee, C., Martinez, A., Xin, K., & Hughes, D. (2019). Expansion of Dental Care for Low-Income Children Through a Mobile Services Program. <i>Journal of School Health</i>, 89(8), 619–628. https://doi-org.pearl.stkate.edu/10.1111/josh.12789</p> | <p>Original research article</p> <p>Level VI: Qualitative and quantitative study</p> | <p>Peer-reviewed, scholarly journal</p> <p>Mixed methods study</p> | <p>“This study evaluates a large mobile dental care program based in Minnesota” (p. 619).</p> | <p>“Thematic analysis of interview data collected during a 2-day site visit and multivariate regression analysis of electronic records of patients (adults and children) that received care from 2000 through 2015, representing 84,279 unique patients” (p. 619).</p> | <p>“The number of patients increased from 5558 in 2000 to 13,863 in 2015. There was a decline in the share of preventive procedures over this period, from 45.7% to 29.4%, and an increase in the share of patients seen at fixed sites. The interview data revealed that program growth relied on relationships with school leaders, expanded scope of practice for dental assistants and dental therapists, and high Medicaid reimbursement” (p. 619).</p> | <p>“Mobile dental care programs can increase both preventive and restorative dental care for individuals who otherwise would not easily access oral health care services; mobile dental programs could be an option in many other communities and schools” (p. 619).</p> |
| <p>Winter, J., Jablonski-Momeni, A., Ladda, A., & Pieper, K. (2018). Long-term effect of intensive</p> | <p>Original research article</p> | <p>Interdisciplinary journal</p> | <p>“The study aimed at determining the dental health of the students as a function of prevention in kindergarten and at school while</p> | <p>“The subjects were in six groups: groups 1 and 2, intensive prevention in</p> | <p>“A significant difference was found in the mean decayed,</p> | <p>“Early prevention, focusing on professionally supported training of toothbrushing in kindergarten and at school,</p> |

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| <p>prevention on dental health of primary school children by socioeconomic status. <i>Clinical oral investigations</i>, 22(6), 2241–2249. https://doi-org.pearl.stkate.edu/10.1007/s00784-017-2318-5</p> | <p>Level II: RCT</p> | <p>Randomized Controlled Trial</p> | <p>taking into account their socioeconomic status and other confounders” (p. 2241).</p> | <p>kindergarten with and without fluoride gel at school; groups 3 and 4, basic prevention in kindergarten with and without fluoride gel at school; groups 5 and 6, no organized prevention in kindergarten with and without fluoride gel at school. Two dental examinations were performed for assessing caries experience and calculating caries increment from second grade (7-year-olds) to fourth grade (9-year-olds). A standardized questionnaire was used to record independent variables. To compare caries scores and preventive measures of various subgroups, non-parametric tests and a binary logistic regression analysis were performed” (p. 2241).</p> | <p>missing, and filled tooth/teeth (DMFT) depending on socioeconomic status (no prevention in kindergarten, fluoride gel at school in children with low SES: DMFT = 0.47 vs. DMFT = 0.18 in children with high SES; $p = 0.023$). Class-specific differences were no longer visible among children who had taken part in an intensive preventive program combining daily supervised toothbrushing in kindergarten and application of fluoride gel in school” (p. 2241).</p> | <p>has a positive effect on dental health and is able to reduce class-specific differences in caries distribution” (p. 2241).</p> |
| <p>Xiang, B., Wong, H. M., Perfecto, A. P., & McGrath, C. (2020). The association of socioeconomic status, dental</p> | <p>Original research article</p> | <p>International, peer-reviewed, scholarly journal</p> | <p>“this study explored which component of factors (e.g., socioeconomic status, clinical status or oral health behaviors, dental anxiety, oral health knowledge)</p> | <p>“Participants were randomly selected from Grade Two (S2) students within 12 secondary schools in</p> | <p>“1207 adolescents (46.6% females) participated in</p> | <p>“Our study indicates that adolescents with poorer oral health knowledge, higher dental anxiety levels, brushing their teeth less</p> |

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| <p>anxiety, and behavioral and clinical variables with adolescents' oral health-related quality of life. <i>Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation</i>, 29(9), 2455–2464. https://doi.org.pearl.stkate.edu/10.1007/s11136-020-02504-7</p> | <p>Level II: RCT</p> | <p>Randomized Controlled Trial</p> | <p>has a better predictive value in different aspects (e.g., oral symptoms, functional limitations, social and emotional conditions) of adolescents' OHRQoL” (p. 2455).</p> | <p>Hong Kong. The independent variables include the following: socio-economic (monthly family income, parents' educational background), oral health behaviors (the frequency of brushing and having snacks like chocolate or biscuits), and oral health-related factors (oral health knowledge, dental anxiety, dental caries and bleeding index). Adolescents' OHRQoL was evaluated using the 16-item Child Perception Questionnaire (CPQ11-14-ISF:16). Frequencies and means were used for data description. Different variables were analyzed as predictors of OHRQoL by multi-level linear regression analysis” (p. 2455).</p> | <p>this study. The mean total CPQ11-14-ISF:16 was 14.2 (9.8). Mean scores of oral symptoms, functional limitations, and emotional and social well-being were 4.4 (2.8), 4.2 (2.8), 3.2 (3.1), and 2.4 (2.7), respectively. In the final model, adolescents with poorer oral health knowledge, higher dental anxiety levels, brushed their teeth less than once a day and consumed chocolates or biscuits more regularly as reported by a statistically worse OHRQoL ($p < 0.05$). In addition, gingival bleeding was a predictor of the oral symptom</p> | <p>than once a day, or having a daily consumption of chocolate or biscuits had statistically worse OHRQoL. These findings can provide guidance for future oral health promotion in improving OHRQoL among adolescents” (p. 2455).</p> |
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| | | | | | domain ($\beta = 0.7, p = 0.027$); the emotional well-being of adolescents whose father went to college had a better OHRQoL ($\beta = -0.9, p = 0.014$) and adolescents from the higher-income family had a statistically better social well-being ($p = 0.015$)” (p. 2455). | |
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Scoping Review Appendix D: Alternative Search Process and Results

Name of Alternative Strategy: AOTA.org

Date of Search: 06/25/2021

Summary of Search Process:

- Process: I logged into the AOTA website and typed “oral health” into the search bar.
- Keywords: oral health
- Limiters: AOTA.org and AJOT

Table 5.

AOTA.org Search Process (06/25/2021)

| Filters / Years | Keywords | Total Yield / Relevant Hits |
|------------------|---------------|-----------------------------|
| AOTA.org AJOT | “oral health” | 525/1 |

Name of Evidence Resource: *RA Request for Action #3* (de Sam Lazaro, 2021)

I read the proposal and referred to the reference list for articles that fit within oral health for low-income children and families. Then, I scanned the titles of all of the references within the proposals and selected articles that were relevant to: oral health, low-income families/children, or education/teaching models. I selected 8 articles for further review.

Name of Alternative Strategy or Evidence Resource: St. Catherine University – Sophia Home

Date of Search: 06/25/2021

Summary of Search Process:

- Process: I logged into St. Catherine University’s Sophia Home (sophia.stkate.edu) and typed “oral health” within the search bar.
- Keywords: “oral health”
- Limiters: none

Table 6.

Reference Search within RA Request for Action #3 (06/25/2021)

| Filters / Years | Keywords | Total Yield / Relevant Hits |
|-----------------|---------------|-----------------------------|
| None | “oral health” | 18/1 |

Name of Evidence Resource: *Providing Oral Health Education to Underserved Children and Families within an Interdisciplinary Team* (Anderson et al., 2020)

Summary of Search Process:

I scanned all references titles and selected articles that were relevant to: oral health, low-income families/children, or education/teaching models. I selected 48 articles for further review.

Scoping Review Appendix E: Alternative Search Literature Matrix

| Reference (APA) | Source Type | Publication Type | Purpose/Aim/Question(s) | Methods | Results | Conclusion / Limitations |
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| <p>Angelopoulou, M. V., Kavvadia, K., Taoufik, K., & Oulis, C. J. (2015). Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional lecturing in 10 year-old children. <i>BMC Oral Health</i>, 15(1), 51-58. https://doi.org/10.1186/s12903-015-0036-4</p> | <p>Original research article</p> <p>Level III: 2 arm parallel-group prospective clinical trial</p> | <p>Peer-reviewed, scholarly journal</p> <p>Clinical Trial</p> | <p>“The aim of this study was to evaluate the effectiveness of experiential learning (EL) or traditional lecturing (TL) school-based oral health education on improving the oral health knowledge, attitude and behavior as well as oral hygiene, gingival health and caries of 10-year-old children in Greece” (p. 2).</p> | <p>“Eighty-four children were recruited for the EL and 100 for the TL group from 3 locations in Greece. Data regarding oral health knowledge, attitude and behavior were collected via questionnaires. Data regarding dental plaque, gingivitis and caries were collected by clinical examination. The evaluation using questionnaires and clinical examination was assessed at baseline and 6 and 18 months afterwards. Two calibrated pediatric dentists</p> | <p>“EL group had statistically significant better hygiene than the TL at 6 months ($p < 0.05$). Within the same group, both groups had enhanced oral health knowledge at 6 and 18 months ($p < 0.05$) and improved oral health behavior ($p > 0.05$) and attitude ($p > 0.05$) at 6 months in comparison to baseline” (p. 1).</p> | <p>“EL program was found more successful than TL in oral hygiene improvement. Both oral health education programs improved the oral health knowledge, attitude and behavior of children” (p. 1).</p> |

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| | | | | <p>examined the students using a periodontal probe and artificial light. Modified hygiene index (HI) was used for dental plaque recording, the simplified gingival index (GI-S) was used for gingivitis and DMFT, based on BASCD criteria, for dental caries. Based on a dedicated manual, the teacher applied in the classroom the oral health educational program using EL” (p. 1).</p> | | |
| <p>Azañedo, D., Hernández-Vásquez, A., Casas-Bendezú, M., Gutiérrez, C., Agudelo-Suárez, A. A., & Cortés, S. (2017). Factors determining access to oral health services among children aged less than 12 years in Peru. <i>Research</i>, 6, 1-8. https://doi.org/10.12688/f1000research.12474.1</p> | <p>Level V: Secondary data analysis</p> | <p>International scholarly journal</p> <p>Dataset/statistics</p> | <p>“This study aimed to evaluate factors that determine access to oral health services among children aged <12 years in Peru between 2014 and 2015” (p. 1).</p> | <p>“We performed a secondary data analysis of 71,614 Peruvian children aged <12 years and their caregivers. Data were obtained from the Survey on</p> | <p>“Of all the children, 51% were males, 56% were aged <5 years, and 62.6% lived in urban areas. The most common</p> | <p>“Wealth index, caregivers’ education level, natural region of residence, age, and type of health insurance are</p> |

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| | | | | <p>Demography and Family Health 2014-2015 (Encuesta Demográfica y de Salud Familiar - ENDES). Children's access to oral health services within the previous 6 months was used as the dependent variable (i.e. Yes/No), and the Andersen and col model was used to select independent variables. Predisposing (e.g., language spoken by tutor or guardian, wealth level, caregivers' educational level, area of residence, natural region of residence, age, and sex) and enabling factors (e.g. type of</p> | <p>type of health insurance was Integral Health Insurance (57.8%), and most respondents were in the first quintile of wealth (31.6%). Regarding caregivers, the most common educational level was high school (43.02%) and the most frequently spoken language was Spanish (88.4%). Univariate analysis revealed that all variables, except sex and primary educational level, were statistically significant. After adjustment, sex, area of</p> | <p>factors that determine residence, age, and type of health insurance are factors that determine access to oral health services among children aged <12 years in Peru. These factors should be considered when devising strategies to mitigate against inequities in access to oral health services" (p. 1).</p> |
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| | | | | health insurance) were considered. Descriptive statistics were calculated, and multivariate analysis was performed using generalized linear models (Poisson family)” (p. 1). | residence, and language were insignificant, whereas the remaining variables were statistically significant” (p. 1). | |
| Bernabé, E., Masood, M., & Vujcic, M. (2017). The impact of out-of-pocket payments for dental care on household finances in low and middle income countries. <i>BMC Public Health</i> , 17(1), 1-8. https://doi.org/10.1186/s12889-017-4042-0 | Original research article Level V: Retrospective review of survey data | Peer-reviewed, scholarly journal Dataset/statistics | “The primary aim of this study was to determine the impact of out-of-pocket payments for dental care on household finances in 40 low and middle income countries. A second aim was to compare the burden of payments for dental care with that for other health services” (p. 1). | “We used data from 174,257 adults, aged 18 years and above, who reported their total and itemized household expenditure in the past four weeks as part of the World Health Surveys. The financial burden on households was measured using the catastrophic health expenditure (CHE) and impoverishment approaches. A household was | “Households that paid for dental care had 1.88 (95% Confidence Interval: 1.78-1.99) greater odds of incurring CHE and 1.65 (95% CI: 1.52–1.80) greater odds of facing impoverishment, after adjustment for covariates. Furthermore, the impact of paying for dental care was lower than that for medications or | “Households with recent dental care spending were more likely to use a large portion of their disposable income and fall below the poverty line. Policy makers ought to consider including dental care as part of universal health care and advocate for the inclusion of dental care coverage in |

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| | | | | classified as facing CHE if it spent 40% or more of its capacity to pay, and as facing impoverishment if it fell below the country specific poverty line after spending on health care was subtracted from household expenditure. The odds of experiencing CHE and impoverishment due to expenditure on dental care were estimated from two-level logistic regression models, controlling for various individual- and country-level covariates” (p. 1). | drugs, inpatient care, outpatient care and laboratory tests but similar to that of health care products, traditional medicine and other health services” (p. 1). | health insurance packages” (p. 1). |
| Bersell, C. H. (2017). Access to oral health care: A national crisis and call for reform. <i>Journal of Dental Hygiene</i> , 91(1), 6–14. https://jdh.adha.org/content/91/1/6 | Level VII: Expert Opinion | Peer-reviewed, scholarly journal | “This report explores the major challenges and current solutions, such as direct access, | N/A | N/A | “It is essential for states to focus resources on |

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| | Review of literature – literature review | Review | increased scope of practice, and various state and federal legislative responses to incorporate dental therapists as mid-level oral health providers as a means to increase access for underserved populations” (p. 6). | | | more cost effective preventive services instead of providing expensive palliative emergency services; establish school-based fluoride and sealant programs; integrate oral health education with prenatal care; reduce the complexities of the Medicaid system; and increase reimbursement fees so more providers will participate. Oral health is an essential component of overall health of individuals, communities, and the |
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| | | | | | | nation. It is not enough to increase access alone without also promoting strategies that will increase oral health literacy and affect meaningful changes in attitudes and beliefs that will lead to behavioral changes” (p. 1). |
| Biordi, D.L., Heitzer, M., Mundy, E., DiMarco, M., Thacker, S., Taylor, E., Huff, M, Marino, D., & Fitzgerald, K. (2015). Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership. <i>American Journal of Public Health</i> , 105(5, Suppl. 2), 23 -29. https://doi.org/10.2105/AJPH.2014.302486 | Level III: Control trial Single cohort study | Peer-reviewed, scholarly journal Comparative study | “We provided oral health care services at 2 sites using a nurse practitioner–dietitian team to increase dental workforce capacity and improve access to care for low-income preschool children” (p. 23). | “Our team provided oral health assessments and education, fluoride varnish application, and dentist referrals. The primary endpoint was participants’ access to oral health care. Secondary endpoints included increasing the practice scope of registered | “From 2010 to 2013, 4360 children received fluoride varnishes in 7195 total visits. Although the proportion of children with dental caries at the first visit was greater at the urban site, both sites were similar by visits 2 and 3. The number of caries declined | “Progress toward eliminating dental health disparities requires addressing barriers to dental care access. We showed that expanding access to oral health services through nurse practitioner–dietitian cooperation |

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| | | | | dietitians through training programs for oral health assessment and the application of fluoride varnishes for children. The oral health and hygiene and dietary habits of the participants were also determined” (p. 23). | with increased program visits, which coincided with an increase in the proportion of participants visiting a dentist” (p. 23). | improved access to preventive fluoride varnishing use in low-income children” (p. 23). |
| Chazin, S., & Glover, J. (2017). A community framework for addressing social determinants of oral health for low-income populations. <i>Technical Assistance Brief</i> , 1-8. https://www.chcs.org/resource/framework-addressing-social-determinants-oral-healthcommunity/ | Level VII: Expert Framework Technical Assistance Brief: Framework | Technical report | “This technical assistance brief explores the experiences of this learning collaborative in order to describe how state- and community-based organizations can engage local stakeholders to address the social determinants of oral health” (p. 2). | “A four-step framework for this undertaking centers on: 1. Identifying the social determinants of oral health in a community; 2. Mapping and mobilizing available community resources through partnerships; 3. Selecting approaches to take action; and 4. Evaluating implementation | “The brief illustrates how United Way of Central Jersey applied the framework in developing its <i>Parent Promotoras</i> model to improve oral health for low income children in its service area” (p. 1). | “Through this approach, partners are likely to remain more motivated, engaged, and accountable for their contributions to the collective effort to address SDOH in the community” (p. 10). |

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| | | | | and impact" (p. 2). | | |
| Chestnutt, I. G. (2014). School-based dental programs prevent dental caries in children at high risk for caries from low socioeconomic backgrounds. <i>Journal of Evidence Based Dental Practice, 14</i> (1), 36–38. https://doi.org/10.1016/j.jebdp.2014.01.009 | Level II: RCT | Interdisciplinary journal Randomized Controlled Trial | "How effective is a school-based dental sealant program for preventing dental caries in French children from low-income backgrounds?" (p. 36). | "The study population comprised 276 first- and second-graders, age 6–7 years, attending 16 elementary schools located in low socioeconomic zones in Nice, France... The key exposure was the placement of a resin-based dental sealant on the occlusal surface of one of a pair of mandibular and/or maxillary first permanent molars. The contralateral unsealed molar acted as control in this split-mouth study. A total of 457 pairs of permanent first molars in 276 children (133 girls and | "At 1-year follow-up, 253 children (421 tooth pairs) remained in the study. First permanent molars that received sealants were less at risk for developing new caries lesions after 1 year of follow-up compared with those from the control group (OR = 0.26, 95% CI: 0.14–0.49). The effect of the sealants was significant only when the analyses included subjects with active caries or a high <i>S. mutans</i> count at baseline. At the 1-year follow-up, total retention was | "The 1-year effectiveness of a school-based dental sealant program in preventing dental caries was demonstrated in children from low socioeconomic areas. The selection of schoolchildren according to individual caries risk factors should be considered in such programs" (p. 36). |

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| | | | | 143 boys) were included" (p. 36). | recorded in 52.7% (n = 222) of the treated teeth" (p. 36). | |
| Chi, D. L., Masterson, E. E., Carle, A. C., Mancl, L. A., & Coldwell, S. E. (2014). Socioeconomic status, food security, and dental caries in US children: Mediation analyses of data from the national health and nutrition examination survey, 2007-2008. <i>American Journal of Public Health, 104</i> (5), 860–864. https://doi.org/10.2105/AJPH.2013.301699 | Level V: Cross-sectional data analysis Survey design (descriptive) | Peer-reviewed, scholarly journal Dataset/statistics | "We examined associations of household socioeconomic status (SES) and food security with children's oral health outcomes" (p. 5). | "We analyzed 2007 and 2008 US National Health and Nutrition Examination Survey data for children aged 5 to 17 years (n = 2206) to examine the relationship between food security and untreated dental caries and to assess whether food security mediates the SES–caries relationship" (p. 5). | "About 20.1% of children had untreated caries. Most households had full food security (62%); 13% had marginal, 17% had low, and 8% had very low food security. Higher SES was associated with significantly lower caries prevalence (prevalence ratio [PR] = 0.77; 95% confidence interval = 0.63, 0.94; P = .01). Children from households with low or very low food security had significantly higher caries | "Interventions and policies to ensure food security may help address the US pediatric caries epidemic" (p. 5). |

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| | | | | | prevalence (PR = 2.00 and PR = 1.70, respectively) than did children living in fully food-secure households. Caries prevalence did not differ among children from fully and marginally food-secure households (P = .17). Food insecurity did not appear to mediate the SES–caries relationship” (p. 5). | |
| Davis, B., & Plaspohl, S. (2017). A review of strategies to increase access to oral health services. <i>Journal of the Georgia Public Health Association</i> , 6(3), 337-341. http://www.gapha.org/jgpha | Level I: Literature review | Peer-reviewed, scholarly journal Review | “This review aimed to identify strategies to increase access to oral health services that will be useful in moving toward the LHI objectives” (p. 380). | “Preliminary research was conducted on the LHI via the Healthy People 2020 website. Health-related, peer-reviewed articles were selected and evaluated to determine current | “Evidenced-based literature shows that economic, educational, and personal barriers prevent access to oral health services. Through health promotion and | “Since primary prevention and early intervention procedures lead to improved oral health, such methods can be useful in reaching the LHI objectives and the target |

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| | | | | strategies used to increase access to oral health services that would lead to achievement of the LHI objectives” (p. 380). | educational interventions, however, good oral health can be established. Such improvements will lead to attaining the LHI objectives in moving towards the target goals of Healthy People 2020” (p. 380). | goal of Healthy People 2020” (p. 380). |
| Duijster, D., de Jong-Lenters, M., & van Loveren, C. (2015). Establishing oral health promoting behaviours in children—parents’ views on barriers, facilitators, and professional support: A qualitative study. <i>BioMed Central Oral Health, 15</i> , 157-170. https://doi.org/10.1186/s12903-015-0145-0 | Level VI: Qualitative study | Peer-reviewed, scholarly journal Interviews | “The aim of this qualitative study was to explore parents’ perceptions of barriers and facilitators that influence these oral health behaviours in children. A further objective was to explore parents’ views on limitations and opportunities for professional support to promote children’s oral health” (p. 1). | “Six focus group interviews were conducted, including a total of 39 parents of 7-year old children, who were recruited from paediatric dental centres in The Netherlands. Interviews were held with Dutch parents of low and high socioeconomic status and parents from Turkish and Moroccan origin. Focus | “Analysis of interview transcripts identified many influences on children’s oral health behaviours, operating at child, family and community levels. Perceived influences on children’s tooth brushing behaviour were primarily located within the direct family | “In conclusion, this qualitative study provided detail regarding parental views on the influences on children oral health behaviours and their opinions on what further support is needed to promote children’s dental health. Parents’ |

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| | | | | <p>group interviews were conducted on the basis of a pre-tested semi-structured interview guide and topic list. Content analysis was employed to analyse the data” (p. 1).</p> | <p>environment, including parental knowledge, perceived importance and parental confidence in tooth brushing, locus of control, role modelling, parental monitoring and supervision, parenting strategies and tooth brushing routines and habituation. The consumption of sugary foods and drinks was influenced by both the direct family environment and factors external to the family, including the school, the social environment, commercials and television,</p> | <p>suggestions for professional oral health support can guide the development or improvement of caries preventive interventions” (p. 1).</p> |
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| | | | | | supermarkets and affordability of foods. Parents raised several suggestions for professional oral health support, which included the provision of clear and consistent oral health information using a positive approach, dietary regulations at school and a multidisciplinary approach among dental professionals, child health centres and other institutions in providing parental support” (p. 1). | |
| Fisher-Owens, S. A., Gansky, S. A., Platt, L. J., Weintraub, J. A., Soobader, M. J., Bramlett, M. D., & Newacheck, P. W. (2007). Influences on children's oral health: A conceptual model. <i>Pediatrics</i> , | Level VII: Expert Opinion Multi-level conceptual model | Peer-reviewed, scholarly journal Guideline | “The purpose of this article was to present a more encompassing conceptual model of the influences on | “The conceptual model presented here was derived | “A multilevel conceptual model is described, with | “This conceptual model represents a starting point |

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| <p>120(3), e510-e520. http://doi.org/10.1542/peds.2006-3084</p> | | | <p>children's oral health" (p. 510).</p> | <p>from the population health and social epidemiology fields, which have moved toward multilevel, holistic approaches to analyze the complex and interactive causes of children's health problems. It is based on a comprehensive review of major population and oral health literatures" (p. 510).</p> | <p>the individual, family, and community levels of influence on oral health outcomes. This model incorporates the 5 key domains of determinants of health as identified in the population health literature: genetic and biological factors, the social environment, the physical environment, health behaviors, and dental and medical care. The model recognizes the presence of a complex interplay of causal factors. Last, the model incorporates the aspect of</p> | <p>for thinking about children's oral health. The model incorporates many of the important breakthroughs by social epidemiologists over the past 25 years by including a broad range of genetic, social, and environmental risk factors; multiple pathways by which they operate; a time dimension; the notion of differential susceptibility and resilience; and a multilevel approach. The study of children's oral health from a global perspective remains</p> |
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| | | | | | time, recognizing the evolution of oral health diseases (e.g., caries) and influences on the child-host over time” (p. 510). | largely in its infancy and is poised for additional development. This work can help inform how best to approach and improve children’s oral health” (p. 510). |
| Freeman, R., Gibson, B., Humphris, G., Leonard, H., Yuan, S., & Whelton, H. (2016). School-based health education programmes, health-learning capacity and child oral health-related quality of life. <i>The Health Education Journal</i> , 75(6), 698-711. https://doi.org/10.1177/0017896915612856 | Level II: RCT | Peer-reviewed, scholarly journal Randomized Controlled Trial | “To use a model of health learning to examine the role of health-learning capacity and the effect of a school-based oral health education intervention (Winning Smiles) on the health outcome, child oral health–related quality of life (COHRQoL)” (p. 698). | “A total of 383, 7- to 8-year-old children were invited to participate and randomly allocated into intervention and control conditions. Baseline and 12-month follow-up assessments of COHRQoL, self-esteem, toothbrushing–fluoride toothpaste knowledge and unstimulated saliva samples were made. An 18-hour post-brushing, saliva | “A total of 238 children participated at baseline and follow-up. A partial latent hybrid model fitted the data reasonably well ($\chi^2 = 65.6$, $df = 50$, $p = .07$) as shown in addition by a Comparative Fit Index of .97 and a Root Mean Square Error of Approximation (RMSEA) value of .042 (90% confidence | “The model of health-learning capacity assisted in explaining the effect of a school-based intervention upon knowledge, toothbrushing behaviour and tentatively on COHRQoL” (p. 698). |

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| | | | | <p>fluoride concentration was used to assess toothbrushing with fluoride toothpaste (behaviour). The data were entered onto SPSSv22. Structural equation modelling was applied using AMOSv22 to test for the role of health-learning capacity (baseline self-esteem and COHRQoL) and simultaneous effects of Winning Smiles upon knowledge, behaviour and COHRQoL (at follow-up)" (p. 698).</p> | <p>interval [CI]: .00, .06). The intervention had a significant effect on toothbrushing-fluoride toothpaste knowledge ($p < .03$) and an effect on COHRQoL at the 6% level ($p < .06$). Knowledge was strongly associated with saliva fluoride concentration ($p < .002$)" (p. 698).</p> | |
| <p>Haleem, A., Khan, M. K., Sufia, S., Chaudhry, S., Siddiqui, M. I., & Khan, A. A. (2016). The role of repetition and reinforcement in school-based oral health education-A cluster randomized controlled</p> | <p>Level II: RCT</p> | <p>Scholarly journal Randomized Controlled Trial</p> | <p>"The present study was conducted to determine the effectiveness of the repeated and reinforced OHE (RR-</p> | <p>"The study was a cluster randomized controlled trial that involved 935 adolescents</p> | <p>"The adolescents' oral health knowledge (OHK) in the DL and PL</p> | <p>"The repetition and reinforcement play a key role in school-based OHE</p> |

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| <p>trial. <i>BMC Public Health</i>, 16(1), 1–11. https://doi.org/10.1186/s12889-015-2676-3</p> | | | <p>OHE) compared to one-time OHE intervention, and to assess its role in dentist-led, teacher-led and peer-led strategies of school-based OHE” (p. 2).</p> | <p>aged 10-11 years. Twenty four boys’ and girls’ schools selected at random in two towns of Karachi, Pakistan were randomly assigned to three groups to receive OHE by dentist (DL), teachers (TL) and peer-leaders (PL). The groups received a single OHE session and were evaluated post-intervention and 6 months after. The three groups were then exposed to OHE for 6 months followed by 1 year of no OHE activity. Two further evaluations at 6-month and 12-month intervals</p> | <p>groups increased significantly by a single OHE Session compared to their baseline knowledge ($p < 0.05$) and the increase was sustained over 6 months. Although one-time OHE resulted in a significant improvement in adolescents’ oral health behavior (OHB) related to the prevention of gingivitis in the two groups ($p < 0.05$), no significant change was observed in their behavior towards prevention of oral cancer. One-time teacher-led OHE was ineffective in improving</p> | <p>irrespective of educators. The trained teachers and peers can play a complementary role in RR-OHE” (p. 1).</p> |
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| | | | | <p>were conducted. The data were collected by a self-administered questionnaire preceded by a structured interview and followed by oral examination of participants” (p. 1).</p> | <p>adolescents’ OHK and OHB. The oral hygiene status (OHS) of the participants in all three groups did not change statistically after one-time OHE. The OHK, OHB and OHS indices increased significantly 6 months after RR-OHE than the initial scores ($p < 0.001$) irrespective of OHE strategy. Although the OHK scores of the DL and PL groups decreased significantly at 12-month evaluation of RR-OHE ($p < 0.05$), the said score of the TL group; and OHB and OHS</p> | |
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| | | | | | scores of all three groups remained statistically unchanged during this period" (p. 1). | |
| Halonen, H., Pesonen, P., Seppä, L., Peltonen, E., Tjäderhane, L., & Anttonen, V. (2013). Outcome of a community-based oral health promotion project on primary schoolchildren's oral hygiene habits. <i>International Journal of Dentistry</i> , 2013, 1–6. https://doi.org/10.1155/2013/485741 | Level III: Control trial Cohort study | Peer-reviewed, scholarly journal Comparative Study | "The aim of this study was to evaluate the outcome of a community-based oral health promotion project based on an individual as well as a public approach on schoolchildren's tooth brushing and other oral health behaviors" (p. 2). | "In the intervention, all children received dental education and some of the 7–12-year-old schoolchildren received individual tooth brushing instructions by a dental nurse in 2009-2010. Parents were present at the instruction sessions. In 2009 and 2010, all the children answered a questionnaire or an oral hygienist on their oral health behavior without identification" (p. 1). | "Tooth brushing frequency increased significantly among the schoolchildren between the years 2009 (61.2%) and 2010 (65%) ($P < 0.05$); more so among younger children (7–10-year-olds) compared to the older ones (11-12-year-olds). The 2010 results showed a slight trend of decreasing tooth brushing frequency by age both among girls and boys. Younger children got | "Our findings indicate that oral health intervention can be beneficial on health behavior especially for children at low grades. All children, 11 to 12 years of age, especially boys, need continuous health promotion" (p. 1). |

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| | | | | | significantly more often parental help or reminding. The girls brushed their teeth significantly more frequently (71.9%) than boys (57.0%)” (p. 1). | |
| Hamasha, A., Warren, J., Levy, S., Broffitt, B., & Kanellis, M. (2006). Oral health behaviors of children in low and high socioeconomic status families. <i>Pediatric Dentistry</i> , 28(4), 310-315. https://doi.org/16903438 | Level IV: Longitudinal study | Peer-reviewed, scholarly journal Clinical Study | “This prospective longitudinal study compared the patterns of oral health behaviors between low and high socioeconomic status (SES) families participating in the Iowa Fluoride Study for a period of 9 years” (p. 310). | “Information on oral health behaviors, including consumption of juices/juice drinks, soda pop, and powder-based drinks, dental visits, and tooth-brushing frequency, was collected longitudinally at periodic intervals from 6 to 108 months of age. Dental exams were conducted at 5 and 9 years of age. Classification of low | “Low SES children consistently had significantly greater consumption of soda pop and powder-based beverages. There were, however, virtually no differences at any time point between groups in: (1) tooth-brushing frequency; (2) use of dentifrice; or (3) fluoride concentration in drinking | “Results suggest that beverage consumption patterns are a key difference between high- and low-socioeconomic status families and could in part explain differences in caries experience between subjects of different SES. Modification of the pattern of soda pop and powder-based beverage consumption |

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| | | | | socioeconomic status (SES; n=70) and high-SES (n=128) children was based on baseline family income and mothers' education levels, with middle SES excluded" (p. 310). | water. Furthermore, the mean number of decayed and filled surfaces was significantly higher in the low-SES group" (p. 310). | in the low-SES groups might reduce their caries experience" (p. 310). |
| Kenney, G. M., McFeeters, J. R., Yee, J. Y., (2005). Preventive dental care and unmet dental needs among low-income children. <i>American Journal of Public Health, 95</i> (8), 1360-1366. https://doi.org/10.2105/AJPH.2004.056523 | Level V: Data analysis | Peer-reviewed, scholarly journal Dataset/statistics | "We examined the ways in which levels of preventive dental care and unmet dental needs varied among subgroups of low-income children" (p. 1360). | "Data were drawn from the 2002 National Survey of America's Families. We conducted bivariate and multivariate analyses, including logistic regression analyses, to assess relationships between socioeconomic, demographic, and health factors and receipt of preventive dental care and unmet dental | "More than half of low-income children without health insurance had no preventive dental care visits. Levels of unmet dental needs among low-income children who had private health insurance coverage but no dental benefits were similar to those among uninsured children. Children of | "Additional progress toward improving the dental health of low income children depends on identifying and responding to factors limiting both the demand for and the supply of dental services. In particular, it appears that expanding access to dental benefits is key to improving |

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| | | | | needs" (p. 1360). | parents whose mental health was rated as poor were twice as likely to have unmet dental needs as other children" (p. 1360). | the oral health of this population" (p. 1360). |
| Kumar, S., Kroon, J., & Lalloo, R. (2014). A systematic review of the impact of parental socio-economic status and home environment characteristics on children's oral health related quality of life. <i>Health and Quality of Life Outcomes</i> , 12(1), 41-56. https://doi.org/10.1186/1477-7525-12-41 | Level I: Systematic Review | Peer-reviewed, scholarly journal Review | "the aim of this study was to conduct a systematic review of the published literature to assess the influence of parental SES and home environment on children's OHRQoL" (p. 2). | "A systematic search was conducted in August 2013 using PubMed, Medline via OVID, CINAHL Plus via EBSCO, and Cochrane databases. Studies that have analysed the effect of parental characteristics (SES, family environment, family structure, number of siblings, household crowding, parents' age, and parents' oral health literacy) on children's | "Findings from majority of the studies suggest that the children from families with high income, parental education and family economy had better OHRQoL. Mothers' age, family structure, household crowding and presence of siblings were significant predictors of children's OHRQoL" (p. 2). | "Accurate conclusions from the studies reviewed are not possible due to the difference in the study population, methods used and statistical tests performed. In general, children from families with high income, parental education and family economy had better OHRQoL" (p. 13). |

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| | | | | <p>OHRQoL were included. Quality assessment of the articles was done by the Effective Public Health Practice Project's Quality Assessment Tool for Quantitative studies. Database search retrieved a total of 2,849 titles after removing the duplicates, 36 articles were found to be relevant. Most of the studies were conducted on Brazilian children and were published in recent two years. Early Childhood Oral Health Impact Scale and Children's Perception Questionnaire were the instruments of</p> | | |
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| | | | | choice in preschool and school aged children respectively" (p. 1). | | |
| Nakre, P. D., & Harikiran, A. G. (2013). Effectiveness of oral health education programs: A systematic review. <i>Journal of International Society of Preventive & Community Dentistry</i> ,3(2), 103-115. https://doi.org/10.4103/2231-0762.127810 | Level I: Systematic Review | Peer-reviewed, scholarly journal Review | "The aim of this paper is to collect and collate information on effectiveness of oral health education programs and to pool data from the studies, which were deemed effective in order to list variables associated and which may have contributed to the success of these programs" (p. 103). | "A search of all published articles in Medline was done using the keywords "oral health education, dental health education, oral health promotion." The resulting titles and abstracts provided the basis for initial decisions and selection of articles. Out of the primary list of articles, a total number of 40 articles were selected as they fulfilled the following inclusion criteria: (1) Articles on oral health programs with an oral health | "This study identifies a few important variables which contribute to the effectiveness of the programs. There is an indication in this review that the most successful oral health programs are labor intensive, involve significant others and has received funding and additional support. A balance between inputs and outputs and health care resources available will determine if | "Oral health education is effective in improving the knowledge attitude and practice of oral health and in reducing plaque, bleeding on probing of the gingiva and caries increment" (Conclusion section). |

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| | | | | education component, (2) Articles published after the year 1990 , and (3) Articles published in English” (Materials and Methods section). | the program can be recommended for general use” (p. 103). | |
| Taveras, E., LaPelle, N., Gupta, R., & Finkelstein, J. (2006). Planning for health promotion in low-income preschool child care settings: focus groups of parents and child care providers. <i>Ambulatory Pediatrics</i> , 6(6), 342–346. https://www.academicpediatrics-journal/ | Level XI: Qualitative study | Peer-reviewed, scholarly journal Interviews | “To identify potentially successful strategies, barriers, and facilitators for health promotion in preschool child care settings” (p. 342). | “We conducted 6 focus groups including each of the following: parents of children attending child care centers and home-based family child care (2 in English, 1 in Spanish) and directors of child care centers and family child care providers (2 in English, 1 in Spanish). Systematic thematic analysis was conducted to generate | “A total of 24 parents and 45 child care providers, serving predominantly urban, low-income children in Boston, participated. Parents and child care providers agreed that inperson group discussions would be the most effective strategy for providing health education information to parents. | “In order to be successful, health promotion strategies in child care settings will need to overcome tensions between providers and parents, allow professional growth of child care providers to serve in a health promotion role, and better integrate external health resources and |

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| | | | | <p>themes to address study questions” (p. 342).</p> | <p>Several barriers that could affect implementation emerged. First, some providers expressed frustration toward parents’ attitudes about child safety and health. Second, there was diversity of opinion among providers on whether conducting health promotion activities was consistent with their training and role. In addition, literacy, language, and cultural barriers were identified as potential barriers to health promotion in</p> | <p>personnel. Group sessions and peer learning opportunities that are culturally and linguistically sensitive are potentially successful strategies for implementation of health promotion interventions for many parents” (p. 342).</p> |
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| | | | | | child care" (p. 342). | |
| <p>Wilson, A., Brega, A., Campagna, E., Braun, P., Henderson, W., Bryant, L., Batliner, T., Quissel, D., & Albino, J. (2016). Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status. <i>Pediatric Dentistry</i>, 38(1), 47-54. https://pubmed.ncbi.nlm.nih.gov/26892215/</p> | Level II: RCT | Peer-reviewed, scholarly journal Randomized Controlled Trial | "The purpose was to validate oral health knowledge and behavior measures from the Basic Research Factors Questionnaire, developed to capture specific themes contributing to children's oral health outcomes and influence of caregivers" (p. 1). | "Data were collected as part of a randomized clinical trial (N=992) aimed at reducing dental caries in young children. Participants were American Indian/Alaska Native caregivers with a child aged three to five years enrolled in a Navajo Nation Head Start Center. Caregivers completed the questionnaire at enrollment with concomitant evaluation of children for decayed, missing, and filled tooth surfaces (dmfs). Oral health knowledge and behavior outcomes were compared with convergent | "Caregiver oral health knowledge was significantly associated with education, income, oral health behavior, and all but one of the oral health attitude measures. Behavior was significantly associated with several measures of oral health attitudes and all but one measure of oral health status. As the behavior score improved, dmfs declined, child/caregiver overall oral health status improved, and pediatric oral health quality of life | "Questionnaire measures were valid for predicting specific caregiver factors potentially contributing to children's oral health status" (p. 1). |

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| | | | | measures (participant sociodemographic characteristics, oral health attitudes, indicators of oral health status)" (p. 1). | improved" (p. 1). | |
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Scoping Review Appendix F: Initial and Critical Appraisal Articles

Primary Research Studies

- Angelopoulou, M. V., Kavvadia, K., Taoufik, K., & Oulis, C. J. (2015). Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional lecturing in 10 year-old children. *BMC Oral Health*, *15*(1), 51-58. <https://doi.org/10.1186/s12903-015-0036-4>
- Bernabé, E., Masood, M., & Vujicic, M. (2017). The impact of out-of-pocket payments for dental care on household finances in low and middle income countries. *BMC Public Health*, *17*(1), 1-8. <https://doi.org/10.1186/s12889-017-4042-0>
- Biordi, D.L., Heitzer, M., Mundy, E., DiMarco, M., Thacker, S., Taylor, E., Huff, M, Marino, D., & Fitzgerald, K. (2015). Improving access and provision of preventive oral health care for very young, poor, and low-income children through a new interdisciplinary partnership. *American Journal of Public Health*, *105*(5, Suppl. 2), 23 -29. <https://doi.org/10.2105/AJPH.2014.302486>
- Chi, D. L., Masterson, E. E., Carle, A. C., Mancl, L. A., & Coldwell, S. E. (2014). Socioeconomic status, food security, and dental caries in US children: Mediation analyses of data from the national health and nutrition examination survey, 2007-2008. *American Journal of Public Health*, *104*(5), 860–864. <https://doi.org/10.2105/AJPH.2013.301699>
- Dela Cruz, A., Mueller, G., Milgrom, P., & Coldwell, S. E. (2012). A community-based randomized trial of postcard mailings to increase dental utilization among low-

- income children. *Journal of Dentistry for Children*, 79(3), 154–158.
<https://www.aapd.org/publications/journals/journal-access/>
- Duijster, D., de Jong-Lenters, M., & van Loveren, C. (2015). Establishing oral health promoting behaviours in children—parents' views on barriers, facilitators, and professional support: A qualitative study. *BioMed Central Oral Health*, 15, 157-170. <https://doi.org/10.1186/s12903-015-0145-0>
- Freeman, R., Gibson, B., Humphris, G., Leonard, H., Yuan, S., & Whelton, H. (2016). School-based health education programmes, health-learning capacity and child oral health-related quality of life. *The Health Education Journal*, 75(6), 698-711. <https://doi.org/10.1177/0017896915612856>
- Haleem, A., Khan, M. K., Sufia, S., Chaudhry, S., Siddiqui, M. I., & Khan, A. A. (2016). The role of repetition and reinforcement in school-based oral health education-A cluster randomized controlled trial. *BMC Public Health*, 16(1), 1–11. <https://doi.org/10.1186/s12889-015-2676-3>
- Halonen, H., Pesonen, P., Seppä, L., Peltonen, E., Tjäderhane, L., & Anttonen, V. (2013). Outcome of a community-based oral health promotion project on primary schoolchildren's oral hygiene habits. *International Journal of Dentistry*, 2013, 1–6. <https://doi.org/10.1155/2013/485741>
- Horowitz, A. M., Kleinman, D. V., Child, W., & Radice, S. D. (2017). Perceptions of dental hygienists and dentists about preventing early childhood caries: A qualitative study. *Journal of Dental Hygiene*, 91(4), 29–36. <https://jdh.adha.org/>

- Levin, K. A., & Currie, C. (2010). Adolescent toothbrushing and the home environment: sociodemographic factors, family relationships and mealtime routines and disorganisation. *Community dentistry and oral epidemiology*, 38(1), 10–18. <https://doi.org/10.1111/j.1600-0528.2009.00509.x>
- Qadri, G., Alkilzy, M., Franze, M., Hoffmann, W., & Splieth, C. (2018). School-based oral health education increases caries inequalities. *Community Dental Health*, 35(3), 153–159. https://doi.org/10.1922/CDH_4145Qadri07
- Spetz, J., Pourat, N., Chen, X., Lee, C., Martinez, A., Xin, K., & Hughes, D. (2019). Expansion of dental care for low-income children through a mobile services program. *Journal of School Health*, 89(8), 619–628. <https://doi.org/10.1111/josh.12789>
- Taveras, E., LaPelle, N., Gupta, R., & Finkelstein, J. (2006). Planning for health promotion in low-income preschool child care settings: focus groups of parents and child care providers. *Ambulatory Pediatrics*, 6(6), 342–346. <https://doi.org/10.1016/j.ambp.2006.07.004>
- Wilson, A., Brega, A., Campagna, E., Braun, P., Henderson, W., Bryant, L., Batliner, T., Quissel, D., & Albino, J. (2016). Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status. *Pediatric Dentistry*, 38(1), 47-54. <https://aapd.publisher.ingentaconnect.com/content/aapd/pd>

Review of Research Studies

Davis, B., & Plaspohl, S. (2017). A review of strategies to increase access to oral health services. *Journal of the Georgia Public Health Association*, 6(3), 337-341.

<https://doi.org/10.21633/jgpha.6.308>

Harris, R. V., Pennington, A., & Whitehead, M. (2017). Preventive dental visiting: a critical interpretive synthesis of theory explaining how inequalities arise.

Community dentistry and oral epidemiology, 45(2), 120–134.

<https://doi.org/10.1111/cdoe.12268>

Knorst, J. K., Sfreddo, C. S., de F Meira, G., Zanatta, F. B., Vettore, M. V., & Ardenghi,

T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. *Community dentistry and oral*

epidemiology, 49(2), 95–102. <https://doi.org/10.1111/cdoe.12616>

Kumar, S., Kroon, J., & Lalloo, R. (2014). A systematic review of the impact of parental socio-economic status and home environment characteristics on children's oral health related quality of life. *Health and Quality of Life Outcomes*, 12(1), 41-56.

<https://doi.org/10.1186/1477-7525-12-41>

Nakre, P. D., & Harikiran, A. G. (2013). Effectiveness of oral health education programs:

A systematic review. *Journal of International Society of Preventive & Community Dentistry*, 3(2), 103-115. <https://doi.org/10.4103/2231-0762.127810>

Raison, H., & Harris, R. V. (2019). Interventions to reduce socio-economic inequalities in dental service utilisation - a systematic review. *Community dental health*,

36(1), 39–45. https://doi.org/10.1922/CDH_4306Raison07

Documents from Grey Literature Search

Bersell, C. H. (2017). Access to oral health care: A national crisis and call for reform.

Journal of Dental Hygiene, 91(1), 6–14. <https://jdh.adha.org/>

Chazin, S., & Glover, J. (2017). A community framework for addressing social

determinants of oral health for low-income populations. *Technical Assistance*

Brief, 1-8. [https://www.chcs.org/resource/framework-addressing-social-](https://www.chcs.org/resource/framework-addressing-social-determinants-oral-healthcommunity/)

[determinants-oral-healthcommunity/](https://www.chcs.org/resource/framework-addressing-social-determinants-oral-healthcommunity/)

Fisher-Owens, S. A., Gansky, S. A., Platt, L. J., Weintraub, J. A., Soobader, M. J.,

Bramlett, M. D., & Newacheck, P. W. (2007). Influences on children's oral health:

A conceptual model. *Pediatrics*, 120(3), e510-e520.

<http://doi.org/10.1542/peds.2006-3084>

Scoping Review Appendix G: Initial Appraisals

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: 2-arm parallel-group prospective clinical trial |
| APA Reference | Angelopoulou, M. V., Kavvadia, K., Taoufik, K., & Oulis, C. J. (2015). Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional lecturing in 10 year-old children. <i>BMC Oral Health</i> , 15(1), 51-58. https://doi.org/10.1186/s12903-015-0036-4 |
| Abstract | Background: School based oral health education through traditional lecturing has been found successful only in improving oral health knowledge, while has low effectiveness in oral hygiene and gingival health. The aim of this study was to evaluate the effectiveness of experiential learning (EL) oral health education to traditional lecturing (TL), on enhancing oral health knowledge, attitude and behavior as well as oral hygiene, gingival health and caries of 10-year-old children. Methods: Eighty-four children were recruited for the EL and 100 for the TL group from 3 locations in Greece. Data regarding oral health knowledge, attitude and behavior were collected via questionnaires. Data regarding dental plaque, gingivitis and caries were collected by clinical examination. The evaluation using questionnaires and clinical examination was assessed at baseline and 6 and 18 months afterwards. Two calibrated pediatric dentists examined the students using a periodontal probe and artificial light. Modified hygiene index (HI) was used for dental plaque recording, the simplified gingival index (GI-S) was used for gingivitis and DMFT, based on BASCD criteria, for dental caries. Based on a dedicated manual, the teacher applied in the classroom the oral health educational program using EL. Results: EL group had statistically significant better hygiene than the TL at 6 months ($p < 0.05$). Within the same group, both groups had enhanced oral health knowledge at 6 and 18 months ($p < 0.05$) and improved oral health behavior ($p > 0.05$) and attitude ($p > 0.05$) at 6 months in comparison to baseline. Conclusion: EL program was found more successful than TL in oral hygiene improvement. Both oral health education programs improved the oral health knowledge, attitude and behavior of children" (p. 7). |
| Author | Credentials: DDS, MS Position and Institution: Assistant Professor, Division of Pediatric Dentistry, Marquette University, School of Dentistry Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: BMC Oral Health Other: BioMed Central |
| Date and Citation History | Date of publication: 2015 Cited By: 55 |
| Stated Purpose or Research Question | "The aim of this study was to evaluate the effectiveness of experiential learning (EL) or traditional lecturing (TL) school-based oral health education on improving the oral health knowledge, attitude and behavior as well as oral hygiene, gingival health and caries of 10-year-old children in Greece" (p. 2). |
| Author's Conclusion | "Results of the present study suggest that experiential learning can be used as a method for oral health education programs in order to obtain better oral hygiene; however it should be repeated frequently" (p. 6). |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This article is directly related to the capstone project type (education) on oral health and its relation to oral health outcomes of oral healthy hygiene behaviors influenced by oral health literacy. This study evaluates 10-year-old children in Greece of various SES (low, high, and rural). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Retrospective review of survey data |
| APA Reference | Bernabé, E., Masood, M., & Vujicic, M. (2017). The impact of out-of-pocket payments for dental care on household finances in low and middle income countries. <i>BMC Public Health</i> , 17(1), 1-8. https://doi.org/10.1186/s12889-017-4042-0 |
| Abstract | <p>Background: Dental care is extremely costly and beyond most people means in developing countries. The primary aim of this study was to determine the impact of out-of-pocket payments for dental care on household finances in 40 low and middle income countries. A second aim was to compare the burden of payments for dental care with that for other health services. Methods: We used data from 174,257 adults, aged 18 years and above, who reported their total and itemized household expenditure in the past four weeks as part of the World Health Surveys. The financial burden on households was measured using the catastrophic health expenditure (CHE) and impoverishment approaches. A household was classified as facing CHE if it spent 40% or more of its capacity to pay, and as facing impoverishment if it fell below the country specific poverty line after spending on health care was subtracted from household expenditure. The odds of experiencing CHE and impoverishment due to expenditure on dental care were estimated from two-level logistic regression models, controlling for various individual- and country-level covariates. Results: Households that paid for dental care had 1.88 (95% Confidence Interval: 1.78-1.99) greater odds of incurring CHE and 1.65 (95% CI: 1.52–1.80) greater odds of facing impoverishment, after adjustment for covariates. Furthermore, the impact of paying for dental care was lower than that for medications or drugs, inpatient care, outpatient care and laboratory tests but similar to that of health care products, traditional medicine and other health services. Conclusion: Households with recent dental care spending were more likely to use a large portion of their disposable income and fall below the poverty line. Policy makers ought to consider including dental care as part of universal health care and advocate for the inclusion of dental care coverage in health insurance packages” (p. 1).</p> |
| Author | <p>Credentials: PhD Position and Institution: Division of Population and Patient Health, King’s College London Dental Institute at Guy’s, King’s College and St. Thomas’ Hospitals, Denmark Hill Campus, Bessemer Road, London Publication History in Peer-Reviewed Journals: Moderate</p> |
| Publication | <p>Type of publication: Peer-reviewed scholarly journal Publisher: BMC Oral Health Other: BioMed Central</p> |
| Date and Citation History | <p>Date of publication: 2017 Cited By: 46</p> |
| Stated Purpose or Research Question | <p>“The primary aim of this study was to determine the impact of out-of-pocket payments for dental care on household finances in 40 low and middle income countries. A second aim was to compare the burden of payments for dental care with that for other health services” (p. 2).</p> |
| Author’s Conclusion | <p>“This study provides evidence of the financial burden that out-of-pocket expenditure for dental care put on households in low and middle income countries. Our findings indicate that out-of-pocket spending on dental care contributes to catastrophic health spending that can push households into poverty” (p. 7).</p> |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study is directly related to evaluating the contextual barrier of out-of-pocket payments for low and middle income countries. However, it is specific to evaluating data from low-income adults (not children). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Single cohort study |
| APA Reference | Biordi, D.L., Heitzer, M., Mundy, E., DiMarco, M., Thacker, S., Taylor, E., Huff, M, Marino, D., & Fitzgerald, K. (2015). Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership. <i>American Journal of Public Health, 105</i> (5, Suppl. 2), 23 - 29. https://doi.org/10.2105/AJPH.2014.302486 |
| Abstract | Objectives. We provided oral health care services at 2 sites using a nurse practitioner–dietitian team to increase dental workforce capacity and improve access to care for low-income preschool children. Methods. Our team provided oral health assessments and education, fluoride varnish application, and dentist referrals. The primary endpoint was participants’ access to oral health care. Secondary endpoints included increasing the practice scope of registered dietitians through training programs for oral health assessment and the application of fluoride varnishes for children. The oral health and hygiene and dietary habits of the participants were also determined. Results. From 2010 to 2013, 4360 children received fluoride varnishes in 7195 total visits. Although the proportion of children with dental caries at the first visit was greater at the urban site, both sites were similar by visits 2 and 3. The number of caries declined with increased program visits, which coincided with an increase in the proportion of participants visiting a dentist. Conclusions. Progress toward eliminating dental health disparities requires addressing barriers to dental care access. We showed that expanding access to oral health services through nurse practitioner–dietitian cooperation improved access to preventive fluoride varnishing use in low-income children” (pp. e23). |
| Author | Credentials: RN, PhD, MSN Position and Institution: School of Nursing, University of Akron Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: American Journal of Public Health Other: Official journal of the American Public Health Association |
| Date and Citation History | Date of publication: 2015 Cited By: 44 |
| Stated Purpose or Research Question | “To increase access to oral health care in vulnerable children from birth to 5 years, we examined the feasibility of linking children’s oral health care services with care at 2 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program sites (1 rural and 1 urban site)” (pp. e23-24). |
| Author’s Conclusion | “Barriers to access remain a significant impediment toward eliminating dental health disparities in low-income children. Our project demonstrated that a nurse practitioner-dietitian delegated work model at WIC sites increased dental workforce capacity by providing access for preventive oral health services, including topical fluoride application, to low-income children, and oral health education and dietary counseling to their parents or guardians. It also suggested that WIC sites could become excellent clinical training sites for nursing, dietetic, dental, and medical education in selected oral health care services” (p. e28). |
| Overall Relevance to | Overall Relevance of Article: Good relevance Rationale: This study relates directly to the population of low-income children, oral health outcomes of oral health literacy and hygiene habits, and an education-based |

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| your EBP Question | program to educate low-income mothers (which is directly related to my doctoral capstone type: education). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Survey design (descriptive) |
| APA Reference | Chi, D. L., Masterson, E. E., Carle, A. C., Mancl, L. A., & Coldwell, S. E. (2014). Socioeconomic status, food security, and dental caries in US children: Mediation analyses of data from the national health and nutrition examination survey, 2007-2008. <i>American Journal of Public Health, 104</i> (5), 860–864. https://doi.org/10.2105/AJPH.2013.301699 |
| Abstract | Objectives. We examined associations of household socioeconomic status (SES) and food security with children’s oral health outcomes. Methods. We analyzed 2007 and 2008 US National Health and Nutrition Examination Survey data for children aged 5 to 17 years (n = 2206) to examine the relationship between food security and untreated dental caries and to assess whether food security mediates the SES–caries relationship. Results. About 20.1% of children had untreated caries. Most households had full food security (62%); 13% had marginal, 17% had low, and 8% had very low food security. Higher SES was associated with significantly lower caries prevalence (prevalence ratio [PR] = 0.77; 95% confidence interval = 0.63, 0.94; P = .01). Children from households with low or very low food security had significantly higher caries prevalence (PR = 2.00 and PR = 1.70, respectively) than did children living in fully food-secure households. Caries prevalence did not differ among children from fully and marginally food-secure households (P = .17). Food insecurity did not appear to mediate the SES–caries relationship. Conclusions. Interventions and policies to ensure food security may help address the US pediatric caries epidemic” (p. 860). |
| Author | Credentials: DDS, PhD Position and Institution: Professor, Department of Oral Health Sciences, School of Dentistry, University of Washington, Seattle Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: American Journal of Public Health Other: Official journal of the American Journal of Public Health |
| Date and Citation History | Date of publication: 2014 Cited By: 129 |
| Stated Purpose or Research Question | “We used nationally representative data from the United States to test 3 hypotheses: (1) food insecurity is positively associated with untreated dental caries, (2) food insecurity mediates the SES---caries relationship, and (3) food insecurity mediates the SES---caries relationship differentially for children from higher- versus lower-SES households” (p. 860). |
| Author’s Conclusion | “Public health efforts to address food insecurity alone within vulnerable populations are unlikely to solve children’s oral health disparities. Identifying potential mediators of food insecurity and caries (e.g., fast foods, sugar sweetened beverages, micronutrients) may allow us to develop specific nutrition-focused social and behavioral interventions for vulnerable populations. Future approaches will involve improving the food environment, quality, and choice for low-income communities; educating socioeconomically vulnerable households on healthy meal and snack preparation; and helping individuals to reduce their frequency of carbohydrate intake. Such interventions can be strengthened by reinforcing preventive oral health behaviors (e.g., fluoride use, dental visits) and are likely to reduce the prevalence of other |

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| | nutrition-mediated systemic conditions such as obesity, diabetes, and cardiovascular diseases” (p. 863). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study is directly related to evaluating the inter-relationship between SES (low-income children) and oral health outcomes (untreated dental caries). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Randomized control trial |
| APA Reference | Dela Cruz, A., Mueller, G., Milgrom, P., & Coldwell, S. E. (2012). A community-based randomized trial of postcard mailings to increase dental utilization among low-income children. <i>Journal of Dentistry for Children</i> , 79(3), 154–158. https://www.aapd.org/publications/journals/journal-access/ |
| Abstract | Purpose —Increasing awareness about the importance of preventive dental care among low income families has been considered to be key to overcoming nonfinancial access to care barriers for children. The purpose of this randomized, controlled trial was to measure the impact of postcard mailings on dental utilization by low-income children through a dental society program designed to increase access to dental care. Methods —Five thousand eight hundred and seven low-income 2- to 4-year-olds were randomly assigned to 1 of 3 groups: (1) Group 1 (N=2,014) received postcards containing information on how to enroll in the Yakima County Access to Baby and Child Dentistry program; (2) Group 2 (N=2,014) received the enrollment information as well as additional information on the availability of fluoride varnish and the need to visit the dentist by the age of 1-year-old; and (3) Group 3 (N=1,779) did not receive postcards. Results —Preventive services utilization rates were not different among the groups: 61% for Group 1, 62% for Group 2, and 60% for Group 3, although rates were high for a Medicaid population. Conclusions —Postcard mailings did not significantly increase utilization of preventive dental services. Other strategies to increase utilization of preventive oral health measures are needed” (p. 1). |
| Author | Credentials: DDS Position and Institution: Pediatric dentist in private practice, Wenatchee, Washington Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: International scholarly journal Publisher: Journal of Dentistry for Children Other: Official Journal for the American Academy of Pediatric Dentistry |
| Date and Citation History | Date of publication: 2012 Cited By: 5 |
| Stated Purpose or Research Question | “This study evaluated the effect of postcards with information about the dental society-run program in Yakima on utilization of dental care by young children enrolled in Medicaid” (p. 2). |
| Author’s Conclusion | “Based on the results of this randomized, controlled trial study, the following conclusion can be made: 1. Postcard mailings did not significantly increase utilization of diagnostic, preventive, or fluoride services over an already high level of utilization existing in Yakima County in 2003 and 2004” (p. 6). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study is directly related to the utilization of oral health services for low-income children (enrolled in Medicaid). This study discusses contextual barriers for low-income children and limitations to increasing both access and utilization of oral healthcare services. This study also provides insight on the effectiveness of informing caregivers of dental services via mailing methods on low-income children’s utilization of these services. |
| Overall Quality | Overall Quality of Article: Moderate quality |

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| of Article | Rationale: Reputable journal and published within the last 10 years. Author has limited publications and citation history. |
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Initial Appraisal: Primary Research Study

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| Type of article | Overall Type: Primary Research Study (qualitative) Specific Type: Phenomenology (surveys and focus groups) |
| APA Reference | Duijster, D., de Jong-Lenters, M., & van Loveren, C. (2015). Establishing oral health promoting behaviours in children—parents' views on barriers, facilitators, and professional support: A qualitative study. <i>BioMed Central Oral Health</i> , 15, 157-170. https://doi.org/10.1186/s12903-015-0145-0 |
| Abstract | <p>Background: The prevention of childhood dental caries relies on adherence to key behaviours, including twice daily tooth brushing with fluoride toothpaste and reducing the consumption of sugary foods and drinks. The aim of this qualitative study was to explore parents' perceptions of barriers and facilitators that influence these oral health behaviours in children. A further objective was to explore parents' views on limitations and opportunities for professional support to promote children's oral health. Methods: Six focus group interviews were conducted, including a total of 39 parents of 7-year old children, who were recruited from paediatric dental centres in The Netherlands. Interviews were held with Dutch parents of low and high socioeconomic status and parents from Turkish and Moroccan origin. Focus group interviews were conducted on the basis of a pre-tested semi-structured interview guide and topic list. Content analysis was employed to analyse the data. Results: Analysis of interview transcripts identified many influences on children's oral health behaviours, operating at child, family and community levels. Perceived influences on children's tooth brushing behaviour were primarily located within the direct family environment, including parental knowledge, perceived importance and parental confidence in tooth brushing, locus of control, role modelling, parental monitoring and supervision, parenting strategies and tooth brushing routines and habituation. The consumption of sugary foods and drinks was influenced by both the direct family environment and factors external to the family, including the school, the social environment, commercials and television, supermarkets and affordability of foods. Parents raised several suggestions for professional oral health support, which included the provision of clear and consistent oral health information using a positive approach, dietary regulations at school and a multidisciplinary approach among dental professionals, child health centres and other institutions in providing parental support. Conclusion: In conclusion, this qualitative study provided detail regarding parental views on the influences on children oral health behaviours and their opinions on what further support is needed to promote children's dental health. Parents' suggestions for professional oral health support can guide the development or improvement of caries preventive interventions" (p. 1).</p> |
| Author | Credentials: N/A Position and Institution: Assistant professor, Department of Preventive Dentistry, Academic Centre for Dentistry Amsterdam, University of Amsterdam Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: BMC Oral Health Other: BioMed Central |
| Date and Citation History | Date of publication: 2015 Cited By: 75 |
| Stated Purpose or | "Therefore, the present study conducted focus group interviews with parents of 7-year-old children from The Netherlands, with the aim to explore their perceptions of factors |

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| Research Question | (barriers and facilitators) that influence children's oral health behaviours...A further objective was to explore parents' views on limitations and opportunities for professional support to promote children's oral health" (p. 2). |
| Author's Conclusion | "In conclusion, this qualitative study provided detail regarding parental views on the influences on children oral health behaviours and their opinions on what further support is needed to promote children's dental health. Their suggestions for professional oral health support can guide the development or improvement of caries preventive interventions. Important suggestions included the provision of clear oral health education using a positive approach, early referral to a dental practice, dietary regulations at school and a multidisciplinary approach in providing parental support, in which dental professionals, child health centres and other institutions work closely together to promote children's oral health" (p. 12). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to understanding low-income and high-income caregivers' perceptions of factors that impact their child's oral health behaviors. However, study was conducted outside of the U.S. so contextual barriers cannot be generalized. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Article

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Cluster randomized control trial |
| APA Reference | Freeman, R., Gibson, B., Humphris, G., Leonard, H., Yuan, S., & Whelton, H. (2016). School-based health education programmes, health-learning capacity and child oral health-related quality of life. <i>The Health Education Journal</i> , 75(6), 698-711. https://doi.org/10.1177/0017896915612856 |
| Abstract | Objective: To use a model of health learning to examine the role of health-learning capacity and the effect of a school-based oral health education intervention (Winning Smiles) on the health outcome, child oral health-related quality of life (COHRQoL). Setting: Primary schools, high social deprivation, Ireland/Northern Ireland. Design: Cluster randomised controlled trial. Method: A total of 383, 7- to 8-year-old children were invited to participate and randomly allocated into intervention and control conditions. Baseline and 12-month follow-up assessments of COHRQoL, self-esteem, toothbrushing-fluoride toothpaste knowledge and unstimulated saliva samples were made. An 18-hour post-brushing, saliva fluoride concentration was used to assess toothbrushing with fluoride toothpaste (behaviour). The data were entered onto SPSSv22. Structural equation modelling was applied using AMOSv22 to test for the role of health-learning capacity (baseline self-esteem and COHRQoL) and simultaneous effects of Winning Smiles upon knowledge, behaviour and COHRQoL (at follow-up). Results: A total of 238 children participated at baseline and follow-up. A partial latent hybrid model fitted the data reasonably well ($\chi^2 = 65.6$, $df = 50$, $p = .07$) as shown in addition by a Comparative Fit Index of .97 and a Root Mean Square Error of Approximation (RMSEA) value of .042 (90% confidence interval [CI]: .00, .06). The intervention had a significant effect on toothbrushing-fluoride toothpaste knowledge ($p < .03$) and an effect on COHRQoL at the 6% level ($p < .06$). Knowledge was strongly associated with saliva fluoride concentration ($p < .002$). Conclusion: The model of health-learning capacity assisted in explaining the effect of a school-based intervention upon knowledge, toothbrushing behaviour and tentatively on COHRQoL" (p. 698). |
| Author | Credentials: MD Position and Institution: Dental Health Services Research Unit, School of Dentistry, University of Dundee, Dundee, UK Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: The Health Education Journal Other: SAGE Publications |
| Date and Citation History | Date of publication: 2016 Cited By: 10 |
| Stated Purpose or Research Question | "The aim, of this investigation, was to use Wolf et al.'s (2009) conceptual model of health learning as theoretical basis to examine the role of health-learning capacity and the effect of a school based oral health education intervention upon the health outcome, COHRQoL, for children residing in areas of high social deprivation in Ireland (Figure 1)" (p. 700). |
| Author's Conclusion | "The model of health-learning capacity assisted in explaining the effect of a school-based intervention upon knowledge, toothbrushing behaviour and tentatively on COHRQoL" (p. 698). |
| Overall Relevance to | Overall Relevance of Article: Good relevance |

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| your EBP Question | Rationale: This study is directly related to low-income children's oral health outcomes following a school-based education intervention. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Article

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Cluster randomized control trial |
| APA Reference | Haleem, A., Khan, M. K., Sufia, S., Chaudhry, S., Siddiqui, M. I., & Khan, A. A. (2016). The role of repetition and reinforcement in school-based oral health education-A cluster randomized controlled trial. <i>BMC Public Health</i> , 16(1), 1–11. https://doi.org/10.1186/s12889-015-2676-3 |
| Abstract | <p>Background: Repetition and reinforcement have been shown to play a crucial role in the sustainability of the effect of Oral Health Education (OHE) programs. However, its relevance to school-based OHE imparted by different personnel is not depicted by the existing dental literature. The present study was undertaken to determine the effectiveness of the repeated and reinforced OHE (RR-OHE) compared to one-time OHE intervention and to assess its role in school-based OHE imparted by dentist, teachers and peers. Methods: The study was a cluster randomized controlled trial that involved 935 adolescents aged 10-11 years. Twenty four boys' and girls' schools selected at random in two towns of Karachi, Pakistan were randomly assigned to three groups to receive OHE by dentist (DL), teachers (TL) and peer-leaders (PL). The groups received a single OHE session and were evaluated post-intervention and 6 months after. The three groups were then exposed to OHE for 6 months followed by 1 year of no OHE activity. Two further evaluations at 6-month and 12-month intervals were conducted. The data were collected by a self-administered questionnaire preceded by a structured interview and followed by oral examination of participants. Results: The adolescents' oral health knowledge (OHK) in the DL and PL groups increased significantly by a single OHE session compared to their baseline knowledge ($p < 0.05$) and the increase was sustained over 6 months. Although one-time OHE resulted in a significant improvement in adolescents' oral health behavior (OHB) related to the prevention of gingivitis in the two groups ($p < 0.05$), no significant change was observed in their behavior towards prevention of oral cancer. One-time teacher-led OHE was ineffective in improving adolescents' OHK and OHB. The oral hygiene status (OHS) of the participants in all three groups did not change statistically after one-time OHE. The OHK, OHB and OHS indices increased significantly 6 months after RR-OHE than the initial scores ($p < 0.001$) irrespective of OHE strategy. Although the OHK scores of the DL and PL groups decreased significantly at 12-month evaluation of RR-OHE ($p < 0.05$), the said score of the TL group; and OHB and OHS scores of all three groups remained statistically unchanged during this period. Conclusions: The repetition and reinforcement play a key role in school-based OHE irrespective of educators. The trained teachers and peers can play a complementary role in RR-OHE" (p. 1)</p> |
| Author | Credentials: N/A Position and Institution: Assistant Professor, Department of Oral Health Sciences, Federal Postgraduate Medical Institute, Shaikh Zayed Medical Complex, Lahore 54600, Pakistan. Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: BMC Public Health Other: BioMed Central |
| Date and Citation History | Date of publication: 2016 Cited By: 47 |

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| Stated Purpose or Research Question | “The present study was conducted to determine the effectiveness of the repeated and reinforced OHE (RR-OHE) compared to one-time OHE intervention, and to assess its role in dentist-led, teacher-led and peer-led strategies of school-based OHE” (p. 2). |
| Author’s Conclusion | “The repetition and reinforcement play a key role in the success of a school-based OHE program no matter whether it is led by dentists, teachers or peer leaders. The findings of the study suggest a complimentary role of trained teachers and peers who can act as all-time available experts in the school system to periodically repeat and reinforce OHE messages” (p. 10). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study directly relates to evaluating the effectiveness of an school-based oral health education program on children’s oral health literacy and hygiene behaviors. This study tests children aged 10-11 yrs. (but is not specific to low-income children). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Article

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Cohort study |
| APA Reference | Halonen, H., Pesonen, P., Seppä, L., Peltonen, E., Tjäderhane, L., & Anttonen, V. (2013). Outcome of a community-based oral health promotion project on primary schoolchildren's oral hygiene habits. <i>International Journal of Dentistry</i> , 2013, 1–6. https://doi.org/10.1155/2013/485741 |
| Abstract | “The aim of this study was to evaluate the effect of a school-based intervention project conducted in a mid-sized Finnish city, Laukaa on schoolchildren's oral health behavior. <i>Material and Methods</i> . In the intervention, all children received dental education and some of the 7–12-year-old schoolchildren received individual tooth brushing instructions by a dental nurse in 2009-2010. Parents were present at the instruction sessions. In 2009 and 2010, all the children answered a questionnaire or an oral hygienist on their oral health behavior without identification. <i>Results</i> . Tooth brushing frequency increased significantly among the schoolchildren between the years 2009 (61.2%) and 2010 (65%) ($P < 0.05$); more so among younger children (7–10-year-olds) compared to the older ones (11-12-year-olds). The 2010 results showed a slight trend of decreasing tooth brushing frequency by age both among girls and boys. Younger children got significantly more often parental help or reminding. The girls brushed their teeth significantly more frequently (71.9%) than boys (57.0%). <i>Conclusions</i> . Our findings indicate that oral health intervention can be beneficial on health behavior especially for children at low grades. All children, 11 to 12 years of age, especially boys, need continuous health promotion” (p. 1). |
| Author | Credentials: PhD Position and Institution: Faculty of Medicine, University of Oulu, 90014 Oulu, Finland Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: International Journal of Dentistry |
| Date and Citation History | Date of publication: 2013 Cited By: 22 |
| Stated Purpose or Research Question | “The aim of this study was to evaluate the outcome of a community-based oral health promotion project based on an individual as well as a public approach on schoolchildren's tooth brushing and other oral health behaviors. We hypothesized that schoolchildren's tooth brushing habits can be influenced by lessons at school and simple individual instructions, especially if the parents become involved” (p. 2). |
| Author's Conclusion | “It can also be concluded that oral health promotion to schoolchildren is beneficial for their health behavior. Our findings emphasize a need of booster-programs targeted to 11-12-year-olds and especially boys. It is also noteworthy that intervention may be more effective on younger children (7–10-year-olds) compared to older children; maybe because of the activity of the parents, which should not be neglected as a resource in oral health promotion” (p. 6). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study is directly related to evaluating educational methods for children and caregivers <i>and</i> how these programs influence children oral hygiene behaviors (i.e. toothbrushing habits). This study evaluates children ages 7-12 yrs., but is not exclusive to low-income children/families. |

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| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |
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Initial Appraisal: Primary Research Study

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| Type of article | Overall Type: Primary Research Study (qualitative) Specific Type: Qualitative pilot study (phenomenology - surveys and focus groups) |
| APA Reference | Horowitz, A. M., Kleinman, D. V., Child, W., & Radice, S. D. (2017). Perceptions of dental hygienists and dentists about preventing early childhood caries: A qualitative study. <i>Journal of Dental Hygiene</i> , 91(4), 29–36. https://jdh.adha.org/ |
| Abstract | <p>Purpose: The objective of this qualitative pilot study was to gain an in-depth understanding of dental hygienists and dentists perspectives regarding children’s oral health and what needs to be done to prevent early childhood caries (ECC), the most frequent chronic disease of childhood. Methods: A skilled facilitator conducted four focus groups and four phone interviews with 20 dental hygienists and 17 dentists practicing in a variety of locations within the state of Maryland. The interview guide was based on results from previous state-wide surveys of dental hygienists and dentists. Sessions were recorded, transcribed, and reviewed by the PI and facilitator. Qualitative content analysis was used to identify and manually code themes. Results: Focus groups and interviews provided rich and insightful information for strategies to help solve the ECC problem in Maryland, which supplemented the earlier quantitative mail survey data. Three key themes emerged: challenges to preventing ECC among low-income families; necessary educational methods and practices; and, the need for inter-professional collaboration. Discussions focused on issues related to educating parents with low oral health literacy about how to prevent ECC and the value of including non-dental health care providers, such as pediatricians and school nurses, in the caries prevention process. Conclusions: Current approaches to educating low-income adults about caries prevention are insufficient to prevent ECC and dental care providers cannot accomplish this goal alone. Ensuring that all dental care providers have a science-based understanding of caries prevention is critical. Integrating science-based oral health preventive care into medical and nursing undergraduate programs could increase providers’ knowledge and confidence towards incorporating oral health into patient care plans; improve the oral health literacy of providers and patients; and improve patient oral health outcomes” (p. 29).</p> |
| Author | Credentials: RDH, PhD Position and Institution: Research associate professor, Department of Behavioral and Community Health at University of Maryland Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Journal of Dental Hygiene Other: Official journal of American Dental Hygiene Association (ADHA) |
| Date and Citation History | Date of publication: 2017 Cited By: 5 |
| Stated Purpose or Research Question | “The purpose of this current study was to complement data from state surveys conducted in the state of Maryland and gain more in-depth understanding of dentists and dental hygienists perspectives regarding children’s oral health and what needs to be done to prevent early childhood caries (ECC)” (p. 30). |
| Author’s Conclusion | “Focus groups and interviews with dental hygienists and dentists provided insightful suggestions for future strategies to help solve the prevailing ECC problem in the state of Maryland. Results from this and previous studies, suggest that traditional approaches to educating at-risk families and caregivers about preventing ECC are |

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| | insufficient to mitigate the disease burden experienced by this population. It is critical that all oral and health care providers have a science-based understanding of caries prevention" (p. 35). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: The study focuses on dental providers perspectives on the barriers that directly impact low-income children's oral health outcomes. Providers discussed: caregiver oral health literacy and education approaches; contextual and financial barriers to nutrition, insurance, and access to services; and interprofessional opportunities to address oral health with low-income families. |
| Overall Quality of Article | Overall Quality of Article: Moderate quality Rationale: Reputable journal and published within the last 10 years. Author has extensive publications, but limited citation history. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Survey data |
| APA Reference | Levin, K. A., & Currie, C. (2010). Adolescent toothbrushing and the home environment: sociodemographic factors, family relationships and mealtime routines and disorganisation. <i>Community dentistry and oral epidemiology</i> , 38(1), 10–18. https://doi.org/10.1111/j.1600-0528.2009.00509.x |
| Abstract | “Abstract – <i>Objectives</i> : Previous studies have shown that sociodemographic factors are associated with adolescent toothbrushing. While there has been some investigation of parental modelling of oral health behaviour and the association between parental support and oral health, there has been no investigation of the home environment and its effect on oral health behaviour. The current study examines variables related to the family, including mealtime routines and family relationships to determine the best predictors of adolescent toothbrushing. <i>Methods</i> : Data from the 2006 Health Behaviour in School-Aged Children Survey were modelled using logistic univariate and multivariable modelling with outcome variable twice-a-day toothbrushing. <i>Results</i> : Higher family socioeconomic and affluence were significantly associated with greater odds of toothbrushing twice a day or more. Family structure was also significantly associated with girls’ toothbrushing. However, under the multivariable model, eating breakfast was found to be the best predictor of twice-a-day toothbrushing among boys and girls. The next best predictor of boys’ toothbrushing was eating family meals and of girls’ toothbrushing, never going to bed hungry, followed by family affluence for both boys and girls. Under the multivariable model, family structure was no longer significantly associated with girls’ toothbrushing. <i>Conclusions</i> : The study shows that the family and home environment should play a central role in the promotion of oral health, through mealtime routines, incorporating a fair parenting style and developing open and positive family relationships. Not only are these strongly associated with twice a day toothbrushing but, unlike sociodemographic factors, they may be relatively easy to adopt” (p. 10). |
| Author | Credentials: NHS, GGC Position and Institution: Child and Adolescent Health Research Unit, University of Edinburgh, Edinburgh, UK Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed, scholarly journal Publisher: Community Dentistry and Oral Epidemiology Other: Journal of Wiley Online Library |
| Date and Citation History | Date of publication: 2010 Cited By: 105 |
| Stated Purpose or Research Question | “This study therefore aims to look at contextual variables related to the family that predict twice-a-day toothbrushing among 11–15-year-old adolescents in Scotland, and to examine whether mealtime routines and family relationships mediate the relationship between sociodemographic variables and toothbrushing” (p. 11). |
| Author’s Conclusion | “However, mealtime routines and positive parent–child relationships are highly associated with prevalence of twice-a-day toothbrushing, and are of particular interest as, unlike attaining higher affluence, they may be relatively easily achieved. This suggests that the family and home environment should play a central role in the promotion of oral health, through mealtime routines, incorporating a fair parenting style and developing open and positive family relationships” (p. 17). |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study is directly related to the outcomes of oral health behavior (i.e. toothbrushing), and the potential influence that socioeconomic factors and contextual (i.e. family/home environment) has in supporting toothbrushing. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Cluster randomized trial |
| APA Reference | Qadri, G., Alkilzy, M., Franze, M., Hoffmann, W., & Splieth, C. (2018). School-based oral health education increases caries inequalities. <i>Community Dental Health</i> , 35(3), 153–159. https://doi.org/10.1922/CDH_4145Qadri07 |
| Abstract | <p>Objective: To evaluate the effect of one and half years of an oral health promotion program in primary schools. Design: A cluster-randomized controlled trial. Participants: 740 students aged 9-12 years (48% female) recruited from the fifth grade of 18 different primary schools in West Pomerania, Germany. Methods: General and oral health education was provided to the teachers in the intervention schools, which they conveyed to their students. No additional measures were conducted in the control schools. Medical and dental school examinations, as well as questionnaires for the students and their parents were conducted at baseline and follow-up. Data were analysed using Poisson regression models. Results: A significant incident rate ratio between caries increment was found, with a 35% higher risk in the control group. However, parents' socioeconomic characteristics modified the effect of the program on their children, as high socio-economic status in the intervention group was associated with 94% reduction in the incidence risk ratio ($p < 0.001$). Conclusions: The program was effective in improving dental health among students with higher socio-economic status. No preventive effect could be found in low socio-economic status groups" (p. 153).</p> |
| Author | Credentials: DDS Position and Institution: Preventive & Pediatric Dentistry Department, University of Greifswald, Germany. Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: Peer-reviewed, scholarly journal Publisher: Community Dental Health Other: Supported by British Dental Editors |
| Date and Citation History | Date of publication: 2018 Cited By: 1 |
| Stated Purpose or Research Question | "To evaluate the effect of one and half years of an oral health promotion program in primary schools" (p. 153). |
| Author's Conclusion | "The program was effective in improving dental health among students with higher socio-economic status. No preventive effect could be found in low socio-economic status groups" (p. 153). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to oral health hygiene behaviors and presence of caries following a school-based education program designed to improve oral health literacy. Population sample consists of children ages 9-12 years of various socioeconomic backgrounds. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (qualitative and quantitative) Specific Type: Mixed methods study |
| APA Reference | Spetz, J., Pourat, N., Chen, X., Lee, C., Martinez, A., Xin, K., & Hughes, D. (2019). Expansion of dental care for low-income children through a mobile services program. <i>Journal of School Health, 89</i> (8), 619–628. https://doi.org/10.1111/josh.12789 |
| Abstract | “BACKGROUND Although access to dental care has improved over time, many children still face difficulty in obtaining services. One strategy to increase access is through mobile dental services, often in collaboration with schools, Head Start programs, and school-based health centers. This study evaluates a large mobile dental care program based in Minnesota. METHODS Thematic analysis of interview data collected during a 2-day site visit and multivariate regression analysis of electronic records of patients (adults and children) that received care from 2000 through 2015, representing 84,279 unique patients. RESULTS The number of patients increased from 5558 in 2000 to 13,863 in 2015. There was a decline in the share of preventive procedures over this period, from 45.7% to 29.4%, and an increase in the share of patients seen at fixed sites. The interview data revealed that program growth relied on relationships with school leaders, expanded scope of practice for dental assistants and dental therapists, and high Medicaid reimbursement. CONCLUSIONS Mobile dental care programs can increase both preventive and restorative dental care for individuals who otherwise would not easily access oral health care services; mobile dental programs could be an option in many other communities and schools” (p. 619). |
| Author | Credentials: PhD Position and Institution: Professor, Philip R. Lee Institute for Health Policy Studies, University of California San Francisco Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Journal of School Health Other: Supported by Wiley Online Library |
| Date and Citation History | Date of publication: 2019 Cited By: 3 |
| Stated Purpose or Research Question | “This paper adds to the programmatic evidence through a mixed-methods evaluation of the impact of the CDS mobile program on access to services and oral health outcomes, based on electronic dental record data from 2000 through 2015 and interview data collected during a site visit” (p. 620). |
| Author’s Conclusion | “Together, the quantitative and qualitative data indicate that the CDS mobile program increased access to both preventive and restorative services. The interview data suggest that their success was facilitated by expanded scope of practice for dental assistants and, more recently, the introduction of DTs and ADTs to the oral health workforce of Minnesota” (p. 627). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study directly relates to contextual factors that support oral healthcare access and utilization for low-income children (i.e. children enrolled in Medicaid). This study incorporates quantitative and qualitative data regarding school-based mobile program in Minnesota. This study also provides insight into common factors that influence low-income families in accessing dental care services. |

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| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |
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Initial Appraisal: Primary Research Study

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| Type of article | Overall Type: Primary Research Study (qualitative) Specific Type: Phenomenology – systematic thematic analysis |
| APA Reference | Taveras, E., LaPelle, N., Gupta, R., & Finkelstein, J. (2006). Planning for health promotion in low-income preschool child care settings: focus groups of parents and child care providers. <i>Ambulatory Pediatrics</i> , 6(6), 342–346. https://doi.org/10.1016/j.ambp.2006.07.004 |
| Abstract | <p>Objective.—To identify potentially successful strategies, barriers, and facilitators for health promotion in preschool child care settings. Methods.—We conducted 6 focus groups including each of the following: parents of children attending child care centers and home-based family child care (2 in English, 1 in Spanish) and directors of child care centers and family child care providers (2 in English, 1 in Spanish). Systematic thematic analysis was conducted to generate themes to address study questions. Results.—A total of 24 parents and 45 child care providers, serving predominantly urban, low-income children in Boston, participated. Parents and child care providers agreed that in person group discussions would be the most effective strategy for providing health education information to parents. Several barriers that could affect implementation emerged. First, some providers expressed frustration toward parents' attitudes about child safety and health. Second, there was diversity of opinion among providers on whether conducting health promotion activities was consistent with their training and role. In addition, literacy, language, and cultural barriers were identified as potential barriers to health promotion in child care. Conclusions.—In order to be successful, health promotion strategies in child care settings will need to overcome tensions between providers and parents, allow professional growth of child care providers to serve in a health promotion role, and better integrate external health resources and personnel. Group sessions and peer learning opportunities that are culturally and linguistically sensitive are potentially successful strategies for implementation of health promotion interventions for many parents" (p. 342).</p> |
| Author | <p>Credentials: MD, MPH Position and Institution: Center for Child Health Care Studies, Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care and the Division of General Pediatrics, Children's Hospital, Boston, Mass USA Publication History in Peer-Reviewed Journals: Extensive</p> |
| Publication | <p>Type of publication: Peer-reviewed scholarly journal Publisher: Ambulatory Pediatrics Other: Jacobs School of Medicine and Biomedical Sciences</p> |
| Date and Citation History | <p>Date of publication: 2006 Cited By: 62</p> |
| Stated Purpose or Research Question | "We conducted focus groups of stakeholders in child care settings, i.e., child care directors, family child care providers, and parents, 1) to identify current health promotion activities and practices; 2) to describe additional health information needs of parents and providers; and 3) to identify potentially successful strategies, barriers, and facilitators for health promotion in these settings" (p. 342). |
| Author's Conclusion | "In summary, preschool child care settings offer untapped opportunities for health promotion and risk reduction activities. The results of the current study inform and encourage continued efforts to advance the health of young children and their families through collaborations between medical and public health professionals and child care providers in both centers and home-based settings" (p. 346). |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Poor relevance Rationale: This study relates directly to understanding caregivers perceptions on contextual factors influence low-income children's health and how to best support caregivers. General health promotion is the focus of this qualitative study and is not exclusive to oral healthcare. |
| Overall Quality of Article | Overall Quality of Article: Moderate quality Rationale: Reputable journal and publisher. Published in 2006 and has moderate citations. |

Initial Appraisal: Primary Research Study

| | Overview of Article |
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| Type of article | Overall Type: Primary Research Study (quantitative) Specific Type: Randomized control trial |
| APA Reference | Wilson, A., Brega, A., Campagna, E., Braun, P., Henderson, W., Bryant, L., Batliner, T., Quissel, D., & Albino, J. (2016). Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status. <i>Pediatric Dentistry</i> , 38(1), 47-54. https://aapd.publisher.ingentaconnect.com/content/aapd/pd |
| Abstract | “Purpose—The purpose was to validate oral health knowledge and behavior measures from the Basic Research Factors Questionnaire, developed to capture specific themes contributing to children’s oral health outcomes and influence of caregivers. Methods—Data were collected as part of a randomized clinical trial (N=992) aimed at reducing dental caries in young children. Participants were American Indian/Alaska Native caregivers with a child aged three to five years enrolled in a Navajo Nation Head Start Center. Caregivers completed the questionnaire at enrollment with concomitant evaluation of children for decayed, missing, and filled tooth surfaces (dmfs). Oral health knowledge and behavior outcomes were compared with convergent measures (participant sociodemographic characteristics, oral health attitudes, indicators of oral health status). Results—Caregiver oral health knowledge was significantly associated with education, income, oral health behavior, and all but one of the oral health attitude measures. Behavior was significantly associated with several measures of oral health attitudes and all but one measure of oral health status. As the behavior score improved, dmfs declined, child/caregiver overall oral health status improved, and pediatric oral health quality of life improved. Conclusions—Questionnaire measures were valid for predicting specific caregiver factors potentially contributing to children’s oral health status” (p. 1). |
| Author | Credentials: DDS, MS Position and Institution: School of Dental Medicine, University of Colorado Anschutz Medical Campus Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Pediatric Dentistry Other: Official journal of the American Academy of Pediatric Dentistry (AAPD) |
| Date and Citation History | Date of publication: 2016 Cited By: 29 |
| Stated Purpose or Research Question | “Thus, the objective of this study was to validate oral health knowledge and behavior measures developed to capture specific themes contributing to children’s oral health outcomes in relation to AI caregivers” (p. 2). |
| Author’s Conclusion | “The results of this investigation support the following conclusions: 1. The BRFQ knowledge and behavior items showed convergent and divergent validity with other measures in expected directions and provided meaningful information related to caregivers’ influence on the oral health status of young children in an AI population. 2. Findings suggest greater emphasis on development of caregivers’ adherence to oral health behaviors will advance children’s oral health status through promoting a positive shift towards improved caregiver self-efficacy and attitudes related to perceived barriers and benefits of recommended oral health behaviors” (p. 8). |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study relates directly to low-income families' oral health literacy and its influence on their childrens' oral health outcomes. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Review of Research Study

| | Overview of Article |
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| Type of article | Overall Type: Review of Research Study Specific Type: Literature review |
| APA Reference | Davis, B., & Plaspohl, S. (2017). A review of strategies to increase access to oral health services. <i>Journal of the Georgia Public Health Association</i> , 6(3), 337-341. https://doi.org/10.21633/jgpha.6.308 |
| Abstract | “Background: Leading Health Indicators (LHIs), a subset of objectives for Healthy People 2020, were selected to communicate at-risk health issues and actions that can be taken to address them. Nationally, the number of children, adolescents, and adults who visited the dentist in the past year has decreased, suggesting that oral health continues to be a problem caused by barriers preventing access to oral health services. This review aimed to identify strategies to increase access to oral health services that will be useful in moving toward the LHI objectives. Methods: Preliminary research was conducted on the LHI via the Healthy People 2020 website. Health-related, peer-reviewed articles were selected and evaluated to determine current strategies used to increase access to oral health services that would lead to achievement of the LHI objectives. Results: Evidenced-based literature shows that economic, educational, and personal barriers prevent access to oral health services. Through health promotion and educational interventions, however, good oral health can be established. Such improvements will lead to attaining the LHI objectives in moving towards the target goals of Healthy People 2020. Conclusions: Since primary prevention and early intervention procedures lead to improved oral health, such methods can be useful in reaching the LHI objectives and the target goal of Healthy People 2020” (p. 380). |
| Author | Credentials: MPH, CHES Position and Institution: Staff, Health Powers, Norcross, Georgia and College of Health Sciences, Armstrong State University, Savannah, Georgia Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Journal of the Georgia Public Health Association Other: Official article of the Georgia Public Health Association |
| Date and Citation History | Date of publication: 2017 Cited By: 2 |
| Stated Purpose or Research Question | “This literature review is based on bibliographic searches of PubMed to gather information and summarize evidence-based strategies identified to increase access to oral health services” (p. 380). |
| Author’s Conclusion | “Evidenced-based results support the need for health promotion programs and health education interventions in communities to improve access to oral health services. For example, increased oral screenings and recurring reminders increase access to oral care and attendance in dental offices” (p. 383). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This literature review is directly related to contextual barriers that exist for low-income communities and evaluating effective educational methods to promote health (capstone type). However, population was not exclusive to low-income children <i>and</i> the focus was on improving access to oral healthcare services (not directly related to oral health outcomes). |

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| Overall Quality of Article | Overall Quality of Article: Moderate quality Rationale: Reputable journal. Publisher has limited publications and citation history. |
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Initial Appraisal: Review of Research Study

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| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review |
| APA Reference | Harris, R. V., Pennington, A., & Whitehead, M. (2017). Preventive dental visiting: a critical interpretive synthesis of theory explaining how inequalities arise. <i>Community dentistry and oral epidemiology</i> , 45(2), 120–134. https://doi.org/10.1111/cdoe.12268 |
| Abstract | <p>“Abstract – <i>Background</i>: In many countries, those with lower socioeconomic status are disproportionately affected by poor oral health. This can be attributed, at least in part, to differences in preventive dental visiting. While several theories have been applied to the area, they generally fail to capture the recursive nature of dental visiting behaviour, and fall short of informing the design of complex interventions to tackle inequalities. <i>Objective</i>: To undertake a systematic review and synthesis of theory in order to provide an overview of the pathways which bring about socioeconomic inequalities in early dental visiting, and identify possible intervention points. <i>Methods</i>: Electronic searching identified 8947 titles and abstracts. Paper screening and citation snowballing left 77 included papers. Drawing on the tenets of Critical Interpretive Synthesis, data extraction involved capturing concepts and relationships and translating these sometimes into synthetic constructs. <i>Results</i>: We theorize that at the individual (micro-level), dental visiting behaviour is influenced by: the ‘Importance of obtaining care’, ‘Emotional response’ and ‘Perceived control’, which feed into a balancing of ‘Competing Demands’ against ‘Internal resources’ (coping, self-identity), although attendance is tempered by the effective ‘Affordability and Availability of services’. Positive Care experiences are theorized to lower the demands and increase internal resources associated with dental visiting. We also outline meso-level factors ‘Social norms and sanctions’, ‘Obligations, expectations and trust’, ‘Information channels’, ‘Social structures’ and theorize how these can exert an overwhelming influence in deprived areas. <i>Conclusions</i>: Socioeconomic inequalities in early dental visiting emerge from several stages in the care-seeking process. Dental visiting behaviour should be viewed not just as a one-off event but extending over time and social space. Since there is recursivity in peoples’ most recent dental experience any future visits we identify that interventions which make care a positive experience for low socioeconomic patients may be particularly beneficial in reducing inequalities” (p. 120).</p> |
| Author | <p>Credentials: BDS, PhD Position and Institution: Professor, Institute of Psychology, Health and Society, University of Liverpool. Publication History in Peer-Reviewed Journals: Extensive</p> |
| Publication | <p>Type of publication: Peer-reviewed scholarly journal Publisher: Community Dentistry and Oral Epidemiology Other: Journal of Wiley Online Library</p> |
| Date and Citation History | <p>Date of publication: 2017 Cited By: 35</p> |
| Stated Purpose or Research Question | <p>“The aim of this article is to report a systematic review of theories of health care seeking concerned with explaining SES differences in preventive dental visiting, based on the review question ‘What mechanisms are theorized to bring about SES inequalities in preventive dental visiting?’” (p. 121).</p> |

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| Author's Conclusion | <p>"This paper identifies points in the care-seeking process where micro-, meso- and macro-level factors influence individuals' behaviour. This duly opens intervention planning up to multilevel approaches and new lines of research which examine the interaction between multi-level interventions. Our review also helps identify where interventions may be most effectively positioned, and informs both the design of interventions and the identification of intermediate outcome measures to evaluate their success" (p. 131).</p> |
| Overall Relevance to your EBP Question | <p>Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to socioeconomic differences in oral health outcomes and access to oral healthcare services. This study provides a review of theoretical explanations for micro-level factors that influence behavior, and extends to contextual factors at the meso-and macro-levels for low-income individuals (but not specific to low-income children although they were included within the search).</p> |
| Overall Quality of Article | <p>Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years.</p> |

Initial Appraisal: Review of Research Study

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| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review and meta-analysis |
| APA Reference | Knorst, J. K., Sfreddo, C. S., de F Meira, G., Zanatta, F. B., Vettore, M. V., & Ardenghi, T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. <i>Community dentistry and oral epidemiology</i> , 49(2), 95–102. https://doi.org/10.1111/cdoe.12616 |
| Abstract | Objectives To systematically review observational studies assessing the association between socioeconomic status (SES) and oral health-related quality of life (OHRQoL) in children, adolescents and adults. Methods Electronic searches were performed in the PubMed, Embase, Web of Science, LILACS and Scopus databases for articles published up to September 2020. Two independent reviewers performed the search and critical appraisal of the studies. The inclusion criteria were observational studies that evaluated the effect of SES on the OHRQoL in all age groups using validated methods. Quality assessment was conducted using the Newcastle-Ottawa Scale. Data were extracted for meta-analysis followed by a meta-regression analysis. A random-effects model was used to estimate the pooled calculate prevalence ratio (PR) and respective 95% confidence intervals (CI) for each study. Results The search strategy retrieved 6114 publications. Some 139 articles met the eligibility criteria and were included in the systematic review. Of those, 75 were included in the general meta-analysis they represented a total sample of 109 269 individuals. People of lower SES had worse OHRQoL (PR 1.30; 95% CI 1.26-1.35). In the meta-analyses of different subgroups, an association was found between low SES and worse OHRQoL in countries of all economic classifications, in all age groups and irrespective of the socioeconomic indicator used. A socioeconomic gradient in OHRQoL was also observed, in which the lower the individuals' socioeconomic position, the poorer their OHRQoL. Conclusions Individuals of low SES had poorer OHRQoL, regardless of the country's economic classification, SES indicator and age group. Public policies aiming to reduce social inequalities are necessary for better OHRQoL throughout life" (p. 95). |
| Author | Credentials: N/A Position and Institution: School of Dentistry, Department of Stomatology, Universidade Federal de Santa Maria, Santa Maria, Brazil Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Community Dentistry and Oral Epidemiology Other: Journal of Wiley Online Library |
| Date and Citation History | Date of publication: 2021 Cited By: 2 |
| Stated Purpose or Research Question | "Accordingly, our aim was to systematically review the evidence from observational studies assessing the association between SES and OHRQoL in children, adolescents and adults, and additionally, to assess which socioeconomic measures influence OHRQoL" (p. 2). |
| Author's Conclusion | "The systematic review provides evidence that low SES is associated with poorer OHRQoL in all age groups" (p. 7). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to oral health of individuals of low socioeconomic status. It evaluates oral health outcomes of quality of life for all age groups (including children and adolescents). |

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| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |
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Initial Appraisal: Review of Research Study

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| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review |
| APA Reference | Kumar, S., Kroon, J., & Lalloo, R. (2014). A systematic review of the impact of parental socio-economic status and home environment characteristics on children's oral health related quality of life. <i>Health and Quality of Life Outcomes</i> , 12(1), 41-56. https://doi.org/10.1186/1477-7525-12-41 |
| Abstract | "Childhood circumstances such as socio-economic status and family structure have been found to influence psychological, psychosocial attributes and Oral Health Related Quality of Life (OHRQoL) in children. Therefore, the aim of this study was to conduct a systematic review of the published literature to assess the influence of parental Socio-Economic Status (SES) and home environment on children's OHRQoL. A systematic search was conducted in August 2013 using PubMed, Medline via OVID, CINAHL Plus via EBSCO, and Cochrane databases. Studies that have analysed the effect of parental characteristics (SES, family environment, family structure, number of siblings, household crowding, parents' age, and parents' oral health literacy) on children's OHRQoL were included. Quality assessment of the articles was done by the Effective Public Health Practice Project's Quality Assessment Tool for Quantitative studies. Database search retrieved a total of 2,849 titles after removing the duplicates, 36 articles were found to be relevant. Most of the studies were conducted on Brazilian children and were published in recent two years. Early Childhood Oral Health Impact Scale and Children's Perception Questionnaire 11-14 were the instruments of choice in preschool and school aged children respectively. Findings from majority of the studies suggest that the children from families with high income, parental education and family economy had better OHRQoL. Mothers' age, family structure, household crowding and presence of siblings were significant predictors of children's OHRQoL. However, definitive conclusions from the studies reviewed are not possible due to the differences in the study population, parental characteristics considered, methods used and statistical tests performed" (p. 1). |
| Author | Credentials: PhD, MRACDS (Dental Public Health), PGD-HP, MDS, BDS. Position and Institution: Population & Social Health Research Program, Griffith Health Institute, School of Dentistry and Oral Health, Gold Coast, Australia Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Health and Quality of Life Outcomes Other: BioMed Central |
| Date and Citation History | Date of publication: 2014 Cited By: 220 |
| Stated Purpose or Research Question | "Therefore, the aim of this study was to conduct a systematic review of the published literature to assess the influence of parental SES and home environment on children's OHRQoL" (p. 2). |
| Author's Conclusion | "In general, children from families with high income, parental education and family economy had better OHRQoL. Mothers' age and home environment characteristics, such as family structure, household crowding and presence of siblings were significantly related to the outcome. Although the association of children's OHRQoL and variables like location of origin of parents in relation to study location, deleterious habits in the family, mother's dental anxiety |

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| | and use of dental services were significant, the evidence is not strong enough as the data supporting their relationship with the outcome is only from one study” (p. 13). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Good relevance Rationale: This study relates directly to the influence of SES and contextual factors (home) that impact children’s oral health outcomes (QoL). |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Review of Research Study

| | Overview of Article |
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| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review |
| APA Reference | Nakre, P. D., & Harikiran, A. G. (2013). Effectiveness of oral health education programs: A systematic review. <i>Journal of International Society of Preventive & Community Dentistry</i> , 3(2), 103-115. https://doi.org/10.4103/2231-0762.127810 |
| Abstract | <p>"In recent years, attention has been drawn toward assessing the effectiveness of oral health education programs. This is in line with demand for evidence based research and will help to inform policy makers on how to allocate resources. (1) Collect and collate all information on oral health education programs. (2) Assess the programs based on various coding criteria. (3) Assess effectiveness of oral health education programs on oral health status and knowledge, attitude and practice. A search of all published articles in Medline was done using the keywords "oral health education, dental health education, oral health promotion". The resulting titles and abstracts provided the basis for initial decisions and selection of articles. Out of the primary list of articles, a total number of 40 articles were selected as they fulfilled the following inclusion criteria: (1). Articles on oral health programs with an oral health education component (2). Articles published after the year 1990 (3). Articles published in English. The full text of the articles was then obtained from either the internet or libraries of dental research colleges and hospitals in and around Bangalore. A set of important variables were identified and grouped under five headings to make them amenable for coding. The coding variables were then described under various subheadings to allow us to compare the chosen articles. Oral health education is effective in improving the knowledge attitude and practice of oral health and in reducing plaque, bleeding on probing of the gingiva and caries increment. This study identifies a few important variables which contribute to the effectiveness of the programs. There is an indication in this review that the most successful oral health programs are labor intensive, involve significant others and has received funding and additional support. A balance between inputs and outputs and health care resources available will determine if the program can be recommended for general use" (p. 103).</p> |
| Author | Credentials: N/A Position and Institution: Department of Public Health Dentistry, Rama Dental College Hospital and Research Centre, Kanpur, Uttar Pradesh, India Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Journal of International Society of Preventive & Community Dentistry Other: Published by Wolters Kluwer |
| Date and Citation History | Date of publication: 2013 Cited By: 194 |
| Stated Purpose or Research Question | "The aim of this paper is to collect and collate information on effectiveness of oral health education programs and to pool data from the studies, which were deemed effective in order to list variables associated and which may have contributed to the success of these programs" (Aim section). |
| Author's Conclusion | "This review has shown that oral health education is effective in improving the knowledge and oral health related practices of the target population when significant others are involved, thus involvement of significant others like teachers and parents especially in oral health education of school children would bring about a higher quantum of change in improving the oral health in children...There is indication in this |

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| | review that the most successful oral health programs are labor intensive, have involved significant others and have received funding and additional support. A balance between inputs and outputs and health care resources available will determine if the program can be recommended for general use” (Conclusion section). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to the capstone type (education) and the effectiveness of educational oral health programs on oral health outcomes. This systematic review evaluated oral health outcomes of various populations and was not exclusive to low-income children or families. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Review of Research Study

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| Type of article | Overall Type: Review of Research Study Specific Type: Systematic review |
| APA Reference | Raison, H., & Harris, R. V. (2019). Interventions to reduce socio-economic inequalities in dental service utilisation - a systematic review. <i>Community dental health</i> , 36(1), 39–45. https://doi.org/10.1922/CDH_4306Raison07 |
| Abstract | <p>Objective: A gradient exists where people with lower socio-economic status (SES) use dental services less regularly than others. Evidence suggests these SES differences may contribute to inequalities in oral health. A variety of approaches have been tried to increase regular dental service use, although it is possible that some are ineffective or may even widen SES inequalities. We aimed to undertake a systematic review of interventions to reduce SES differences in dental visiting. Basic research design: Interventions limited to those influencing dental service use by adults. Any type of experimental design, investigating interventions aiming to reduce SES inequalities in dental service use, was included. Primary outcome was a measure of dental utilisation. Results: Electronic search of 8 databases, with citation snowballing, identified 14,396 titles and abstracts. Paper eligibility screening identified 63 full papers, of which 6 met the inclusion criteria. All included studies were conducted in the United States. Of these, three were targeted to parents, and two towards pregnant women. Two studies incorporated mailing postcards as (at least) one component of the intervention, although results were mixed. Another three studies included scheduling dental appointments as part of a multi-component approach, again with mixed results. The remaining study, involving community health advisors undertaking activities aimed at raising community awareness, found no significant intervention effect. Conclusions: Evidence in this area is limited and results are mixed. More work is needed to investigate the effectiveness of interventions to reduce SES inequalities, especially in different healthcare systems and involving a wider participant range" (p. 39).</p> |
| Author | Credentials: N/A Position and Institution: Dental Public Health, Department of Health Services Research, The University of Liverpool, Liverpool Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Peer-reviewed, scholarly journal Publisher: Community Dental Health Other: Supported by British Dental Editors |
| Date and Citation History | Date of publication: 2019 Cited By: 3 |
| Stated Purpose or Research Question | "This study therefore aimed to undertake a systematic review of interventions to reduce socio-economic inequalities in dental service utilisation in adults" (p. 39). |
| Author's Conclusion | "This systematic review has shown that evidence in this area is limited, with mixed results. There is a lack of research into interventions which aim to reduce socioeconomic inequalities in adult dental visiting, and interventions that target community or structural causes of these inequalities. More work is needs to be done to investigate the effectiveness of interventions to reduce SES inequalities in dental visiting in a wider range of healthcare systems and populations" (p. 44). |

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| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to oral health interventions to reduce disparities among individuals of low socioeconomic status. However, this review pertains strictly to adults of low SES. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Grey Literature - Review of Literature

| | Overview of Article |
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| Type of article | Overall Type: Review of Literature Specific Type: Literature review |
| APA Reference | Bersell, C. H. (2017). Access to oral health care: A national crisis and call for reform. <i>Journal of Dental Hygiene</i> , 91(1), 6–14. https://jdh.adha.org/content/91/1/6 |
| Abstract | “Purpose: According to the report Healthy People 2020, oral health is integral to overall health and access to dental services is essential to promoting and maintaining good oral health. Yet, those who need dental care the most are often the least likely to receive it. The dental hygiene profession is poised to play a pivotal role in the resolution of oral health disparities. The purpose of this manuscript is to examine the critical issue of access to oral health care in the United States from various perspectives and consider potential implications for dental professionals and the oral health care system. This report focuses on major underserved and vulnerable populations and highlights several barriers that significantly affect the ability to access and navigate the oral health care system. These include low socioeconomic status; the shortage and maldistribution of dentists; a lack of professional training regarding current evidence-based oral health guidelines; deficient continuity of care due to inadequate interdisciplinary collaboration; low oral health literacy; and patient perceptions and misconceptions about preventive dental care. This report also contains an update on provider participation in Medicaid; the state of children’s oral health; and emerging workforce models, state initiatives, and legislative reforms. Recommendations increasing access to care require local, state, and federal stakeholders to combine forces that take advantage of the existing dental hygiene workforce, utilize innovative delivery models, improve license reciprocity, reduce prohibitive supervision, and expand the dental hygiene scope of practice. The major focus of future research will be on the implementation of mid-level oral health care providers. Dental hygienists are an integral part of the access to care solution and have a great opportunity to lead the call to action and fulfill the American Dental Hygienists’ Association’s mandate that oral health care is the right of all people” (p. 6). |
| Author | Credentials: RDH, BASDH Position and Institution: Clinical dental hygienist, researcher and writer in Orlando, Florida Publication History in Peer-Reviewed Journals: Limited |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Journal of Dental Hygiene Other: Official journal of the American Dental Hygienists’ Association |
| Date and Citation History | Date of publication: 2017 Cited By: 42 |
| Stated Purpose or Research Question | “This report explores the major challenges and current solutions, such as direct access, increased scope of practice, and various state and federal legislative responses to incorporate dental therapists as mid-level oral health providers as a means to increase access for underserved populations” (p. 6). |
| Author’s Conclusion | “Oral health is an essential component of overall health of individuals, communities, and the nation. It is not enough to increase access alone without also promoting strategies that will increase oral health literacy and affect meaningful changes in attitudes and beliefs that will lead to behavioral changes” (p. 12). |
| Overall Relevance to | Overall Relevance of Article: Moderate relevance |

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| your EBP Question | Rationale: This report relates directly to the population of low-income communities and specifically discusses contextual barriers that influence oral health outcomes of low-income children. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published within the last 10 years. |

Initial Appraisal: Grey Literature - Conceptual Article

| | Overview of Article |
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| Type of article | Overall Type: Conceptual Article Specific Type: Framework |
| APA Reference | Chazin, S., & Glover, J. (2017). A community framework for addressing social determinants of oral health for low-income populations. <i>Technical Assistance Brief</i> , 1-8. https://www.chcs.org/resource/framework-addressing-social-determinants-oral-healthcommunity/ |
| Abstract | “There is growing recognition that the places where individuals live, learn, work, and play significantly influence their oral health. Addressing these <i>social determinants of health</i> in a community can lead to improved access to care, utilization, and outcomes — reducing the current oral health disparities experienced among low-income and other vulnerable populations. This technical assistance brief describes a framework for assessing and creating partnerships to improve social determinants related to oral health. It draws from work undertaken in a Center for Health Care Strategies learning collaborative, made possible by the DentaQuest Foundation, that supported three organizations in addressing social determinants of oral health in their regions. The brief illustrates how United Way of Central Jersey applied the framework in developing its <i>Parent Promotoras</i> model to improve oral health for low-income children in its service area” (p. 1). |
| Author | Credentials: MPH, CHES Position and Institution: Director of Capacity Building and Technical Assistance, Oral Health Progress and Equity Network (OPEN) Publication History in Peer-Reviewed Journals: Moderate |
| Publication | Type of publication: Technical Report Publisher: Technical Assistance Brief Other: Center for Health Care Strategies, Inc. |
| Date and Citation History | Date of publication: 2017 Cited By: 4 |
| Stated Purpose or Research Question | “This technical assistance brief explores the experiences of this learning collaborative in order to describe how state- and community-based organizations can engage local stakeholders to address the social determinants of oral health” (p. 2). |
| Author’s Conclusion | “Mobilizing community resources to build partnerships is critical to overcoming inequalities in SDOH. These partners should have deep roots in the community and relationships with residents that produce invaluable perspectives to understanding and planning to address needs. Building these relationships takes time and a commitment to establishing a collective vision. Through this approach, partners are likely to remain more motivated, engaged, and accountable for their contributions to the collective effort to address SDOH in the community” (p. 10). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study relates directly to the population of low-income families and the contextual barriers they face in accessing dental healthcare. This technical assistance brief will be useful to refer to in partnering with Ready, Set, Smile in utilizing the outlined framework; however, it does not evaluate the effectiveness on oral health outcomes or education programs to improve oral health literacy. This would have to be done by us (potentially) through using their outlined framework. |

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| Overall Quality of Article | Overall Quality of Article: Moderate quality Rationale: Reputable organization designed to address inequalities experience by low-income Americans. Publisher has moderate publications and citations. |
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Initial Appraisal: Grey Literature - Conceptual Article

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| Type of article | Overall Type: Conceptual Article Specific Type: Multilevel conceptual model |
| APA Reference | Fisher-Owens, S. A., Gansky, S. A., Platt, L. J., Weintraub, J. A., Soobader, M. J., Bramlett, M. D., & Newacheck, P. W. (2007). Influences on children's oral health: A conceptual model. <i>Pediatrics</i> , 120(3), e510-e520. http://doi.org/10.1542/peds.2006-3084 |
| Abstract | <p>OBJECTIVES. Despite marked improvements over the past century, oral health in America is a significant problem: caries is the most common chronic disease of childhood. Much oral health research examines influences primarily in the oral cavity or focuses on a limited number of individual-level factors. The purpose of this article was to present a more encompassing conceptual model of the influences on children's oral health. METHODS. The conceptual model presented here was derived from the population health and social epidemiology fields, which have moved toward multilevel, holistic approaches to analyze the complex and interactive causes of children's health problems. It is based on a comprehensive review of major population and oral health literatures. RESULTS. A multilevel conceptual model is described, with the individual, family, and community levels of influence on oral health outcomes. This model incorporates the 5 key domains of determinants of health as identified in the population health literature: genetic and biological factors, the social environment, the physical environment, health behaviors, and dental and medical care. The model recognizes the presence of a complex interplay of causal factors. Last, the model incorporates the aspect of time, recognizing the evolution of oral health diseases (e.g., caries) and influences on the child-host over time. CONCLUSIONS. This conceptual model represents a starting point for thinking about children's oral health. The model incorporates many of the important breakthroughs by social epidemiologists over the past 25 years by including a broad range of genetic, social, and environmental risk factors; multiple pathways by which they operate; a time dimension; the notion of differential susceptibility and resilience; and a multilevel approach. The study of children's oral health from a global perspective remains largely in its infancy and is poised for additional development. This work can help inform how best to approach and improve children's oral health" (p. 510).</p> |
| Author | Credentials: MD, MPH Position and Institution: Pediatrician, Department of Pediatrics and Institute of Health Policy, School of Medicine Publication History in Peer-Reviewed Journals: Extensive |
| Publication | Type of publication: Peer-reviewed scholarly journal Publisher: Pediatrics Other: American Academy of Pediatrics |
| Date and Citation History | Date of publication: 2007 Cited By: 710 |
| Stated Purpose or Research Question | "The purpose of this multidimensional, multilevel conceptual model is to stimulate discussion about determinants of children's oral health from a population health perspective. The model supplies a framework for research, for policy-making, and for more effective resource allocation to improve children's oral health" (e511). |
| Author's Conclusion | "Recent progress in applying new multivariate statistical methodologies in overall public health suggests that applying an appropriately complex, yet manageable, model to children's oral health also will result in improvements in predictive power. The |

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| | conceptual model draws on the established public health literature to guide the selection of levels, relying on recent oral health research to hone in on the key variables within each level (child, family, and community)” (p. e516). |
| Overall Relevance to your EBP Question | Overall Relevance of Article: Moderate relevance Rationale: This study is directly related to the contextual barriers that influence children’s oral health outcomes. However, it is not specific to low-income children, but the outlined framework is a useful guide to refer to prior to working with families and understanding baseline information on how to address barriers at each level. |
| Overall Quality of Article | Overall Quality of Article: Good quality Rationale: Reputable journal and publisher. Published in 2007, but has extensive citations. |

Scoping Review Appendix H: Critical Appraisals

Critical Appraisals

Critical Appraisal: Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership.

| | Summary |
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| APA Reference | Biordi, D.L., Heitzer, M., Mundy, E., DiMarco, M., Thacker, S., Taylor, E., Huff, M, Marino, D., & Fitzgerald, K. (2015). Improving access and provision of preventive oral health care for very young, poor, and low income children through a new interdisciplinary partnership. <i>American Journal of Public Health, 105</i> (5, Suppl. 2), 23 -29. https://doi.org/10.2105/AJPH.2014.302486 |
| Abstract | “Objectives. We provided oral health care services at 2 sites using a nurse practitioner–dietitian team to increase dental workforce capacity and improve access to care for low-income preschool children. Methods. Our team provided oral health assessments and education, fluoride varnish application, and dentist referrals. The primary endpoint was participants’ access to oral health care. Secondary endpoints included increasing the practice scope of registered dietitians through training programs for oral health assessment and the application of fluoride varnishes for children. The oral health and hygiene and dietary habits of the participants were also determined. Results. From 2010 to 2013, 4360 children received fluoride varnishes in 7195 total visits. Although the proportion of children with dental caries at the first visit was greater at the urban site, both sites were similar by visits 2 and 3. The number of caries declined with increased program visits, which coincided with an increase in the proportion of participants visiting a dentist. Conclusions. Progress toward eliminating dental health disparities requires addressing barriers to dental care access. We showed that expanding access to oral health services through nurse practitioner–dietitian cooperation improved access to preventive fluoride varnishing use in low-income children” (p. 23). |
| Your Focused Question and Clinical Bottom Line | <i>Question:</i> What is the effectiveness of providing oral health preventive services in improving the access and oral health behaviors of low-income families partnered with Women, Infant and Children (WIC) programs? <i>Clinical Bottom Line:</i> Allied health professionals can improve the oral health literacy, outcomes, and behaviors of low-income families through community-based, educational and preventive programs. |
| Your Lay Summary | Women, Infants, and Children (WIC) sites support the nutrition, financial, and health needs of children and guardians. Nutrition and oral health impact a child’s health, speech, education, and development. Nutrition and dental services can improve the oral health of children. Dentists have partnered with WIC staff to improve the oral health of children. A study done in 2015 revealed the benefits of WIC staff providing oral health services to children enrolled in their program. These benefits included convenience in nutrition and oral health services provided during single visits. There was also a reduction in cavities in children after they received multiple fluoride varnish applications. WIC staff can provide a fluoride varnish, which is a sealer that helps protect the teeth from decay. They can also educate guardians about diet, drinks, and hygiene habits that best protect the teeth from cavities. We understand that cost, transportation, and fear of the dentist can be barriers to receiving care. Contact your local dentist and WIC partner about questions and services for your child. We are here to support you and your child’s health. |

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| Your Professional Summary | <p>This single cohort study evaluated the effectiveness of an interdisciplinary oral health preventive program in increasing access to dental care for children enrolled in rural and urban Women, Infant, and Children (WIC) sites. Authors used a workforce expansion model to guide service delivery of fluoride varnish application, oral health education, and oral health assessments. Services were provided to 4360 children ages birth to five years throughout 7195 total visits during families' 3 and 6-month follow-up appointments. Children received fluoride varnish at each visit. Guardians received oral health education and participated in an oral health survey regarding oral hygiene, dietary practices, and dentist visits. Measures were used to analyze changes in oral health status and habits throughout five visits.</p> <p>Urban site children experienced a significantly greater presence of dental caries than the rural site at visit one. By visits 2 and 3, there was no significant difference in the presence of dental caries between sites. There was a significant increase in the proportion of participants who visited the dentist and an increase in daily toothbrushing from visit one to visit three.</p> <p>Strengths of this study included a well-supported rationale for the use of WIC sites in delivering preventive oral health services and the comparison of outcomes from two different contexts. Limitations included the lack of randomization of the sample. No explanation was provided for choosing the specific WIC sites or why only two WIC sites were evaluated. Authors also identified an unexplained drop in the number of children over time. Implications of this study identify a need for future studies to evaluate cost-benefits of long-term workforce expansion in addressing oral health with low-income families enrolled in community and government-supported programs.</p> |
| | Critical Appraisal |
| Stated Purpose or Research Question | <p>"To increase access to oral health care in vulnerable children from birth to 5 years, we examined the feasibility of linking children's oral health care services with care at 2 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program sites (1 rural and 1 urban site)" (pp. e23-24).</p> |
| Background Literature | <p><i>Key points of the intro section:</i></p> <ul style="list-style-type: none"> ● Objectives from Healthy People 2010 and Healthy People 2020 aim to (1) reduce oral health conditions of dental caries for children and adults, and (2) increase access to preventive oral healthcare services. ● Poor children (100% below federal poverty level) have a higher rate of dental caries than those above it, especially for children ages 3 to 5 years. ● Low-income children under the age of 5 are at increased risk of untreated dental caries due to unhealthy nutrition habits. ● "the shortage of dentists is compounded by the low proportion of dentists that treat children covered by public insurance" (p. e23). ● Delivery models have been implemented "to meet the demands for greater access to dental care...that increase the dental workforce capacity" (p. e23). ● Women, Infants, and Children (WIC) programs are advantageous for providing preventive oral healthcare services because they (1) see more than half of all U.S. children, and (2) require consistent follow-up appointments with the vulnerable populations. <p><i>Theoretical perspective: Workforce expansion model</i></p> |
| Research Design | <p><i>Research design:</i> Single cohort study <i>Rationale for the design:</i> Not reported. <i>For quantitative primary research, AOTA Level of Evidence:</i> Level II</p> |

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| Sampling | <p><i>Sampling method used and the rationale:</i> “Participants were recruited at 2 Ohio WIC sites—1 urban (population 208 000) and 1 rural (population 11 422)—which were separated by approximately 40 miles” (p. e24).</p> <p><i>Inclusion criteria:</i> “We included 4360 children who were younger than 5 years whose parents or guardians were enrolled in the WIC program” (p. e24).</p> <p><i>Exclusion criteria:</i> Not reported.</p> <p><i>Power/sample size estimate:</i> Not reported.</p> |
| Sample | <p><i>Number of Participants (Total and Subgroups):</i> 4360 total children, “with 2493 (57.2%) children visiting the rural site and 1867 (42.8%) visiting the urban site” (p. e 25).</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> “The mean age of the children at the first visit was 2.31 years (2.30 years at the rural site and 2.32 year at the urban site), which increased to 3.15 and 3.76 years by the third and fifth visits, respectively. Males comprised 51% of participants and females 49% (Table 1)” (p. e25).</p> <p><i>Dropouts:</i> “Because the number of children with 4 or 5 visits was much lower, we subsequently chose to focus in this study on those children with at least 3 visits. We had no data to account for the drop in numbers in subsequent visits, but speculated that children aged into other preschool programs and were not then followed at WIC” (p. e25).</p> |
| Groups | <p><i>Types of groups: (e.g., intervention, sample characteristic):</i> “Participants were recruited at 2 Ohio WIC sites—1 urban (population 208 000) and 1 rural (population 11 422)—which were separated by approximately 40 miles” (p. e24).</p> <p><i>Group one description:</i> Urban WIC site – “1867 (42.8%) visiting the urban site... The mean age of the children at the first visit was 2.31 years (2.32 year at the urban site), which increased 3.15 and 3.76 years by the third and fifth visits, respectively” (p. e25).</p> <p><i>Group two description:</i> Rural WIC site – “2493 (57.2%) children visiting the rural site... The mean age of the children at the first visit was 2.31 years (2.30 years at the rural site...), which increased to 3.15 and 3.76 years by the third and fifth visits, respectively” (p. e25).</p> |
| Method | <p><i>Primary methods to answer research question:</i> Intervention, chart review, and survey.</p> <p>Varnish Application “The procedure was completed with oral and written instructions to the parent or guardian regarding the varnish application and subsequent oral mouth care” (p. e25).</p> <p>Parent or Guardian Education “At each oral health visit, the following topics were discussed with the parent or guardian, and written educations materials were provided: appropriate brushing and use of fluoride for the child’s age (range = 100%---96.6%); frequency and type of carbohydrate-rich snacks or beverages consumed (range=68.2%--31.1%); appropriate use of the bottle or sippy cup (range = 54.2%---26.7%); fluoride concerns (range = 15.2%---1.7%); and the importance of dental visits (range = 51.1%---23.0%). The ranges indicated the proportion of visits at which this particular topic was discussed with the parents” (p. e25).</p> <p>Oral Health Assessment “The oral health of each participant was recorded in a dental screening record by the clinicians. Using this record (instrument), the status of the child’s teeth (number of missing, broken, decayed or discolored, filled, and silver capped teeth) and gums (normal, teething, inflamed, and lesions) were recorded at each visit using a dental mirror and artificial light...In addition to the dental screening record, a parent or guardian oral health survey was completed by the parent or guardian at each visit” (p. e25).</p> |

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| Measurement and Outcomes | <p><i>Parent or Guardian Education:</i> oral and written instruction related to brushing, fluoride use, dietary practices, and dental visits. Frequency discussed with parents/guardians: “At each oral health visit, the following topics were discussed with the parent or guardian, and written education materials were provided: appropriate brushing and use of fluoride for the child’s age (range = 100%---96.6%); frequency and type of carbohydrate-rich snacks or beverages consumed (range=68.2%---31.1%); appropriate use of the bottle or sippy cup (range = 54.2%---26.7%); fluoride concerns (range = 15.2%---1.7%); and the importance of dental visits (range = 51.1%---23.0%)” (p. e25).</p> <p><i>Oral Health Assessment:</i> “Compared with the teaching nurse practitioner, the clinicians demonstrated reliability for teeth and gum oral health assessments. Reliability was ensured by working together until the clinicians and the teaching nurse practitioner reached 100% agreement, followed by periodic assessments to confirm continued reliability. In addition to the dental screening record, a parent or guardian oral health survey was completed by the parent or guardian at each visit. In this survey, preventive oral health care, dietary habits, and dental visits of the child were recorded. In addition, the reasons for not seeing a dentist were collected at each oral health visit” (p. e25).</p> |
| Results | <p><i>Description of the sample:</i> “From July 2010 to September 2013, 4360 children received fluoride varnishes in 7195 visits at 2WIC sites, with 2493 (57.2%) children visiting the rural site and 1867 (42.8%) visiting the urban site (Table 1). Children’s visits were spaced either 3 or 6 months apart, according to WIC procedures. The mean age of the children at the first visit was 2.31 years (2.30 years at the rural site and 2.32 year at the urban site), which increased to 3.15 and 3.76 years by the third and fifth visits, respectively. Males comprised 51% of participants and females 49% (Table 1). No significant differences in age or gender of the program participants were observed between the urban and rural sites. Of the 4360 children who received at least 1 fluoride varnish, 1832 children returned for a second visit, and 728 (236 urban and 492 rural) received 3 or more fluoride varnishes within the project period (Table 1)” (p. e25).</p> <p><i>Oral Health Status:</i> “the proportion of children who had dental caries (decayed, discolored, or filled teeth) at the first visit was 17.1%, with a significantly greater proportion found in the urban site compared with the rural site (21.4% vs 13.9%, respectively; $P < .05$). By visits 2 and 3, no differences in the proportion of children presenting with dental caries were observed between the urban and rural sites (Table 2). Analysis of the number of caries by total number of program visits for each child revealed that, although the proportion of children with at least 1 decayed, discolored, or filled tooth increased with each successive program visit, the mean number of caries for the study population actually dropped between the first and second program visits, and thereafter leveled off and remained relatively unchanged across the second and third visits...Gum status was also examined in the dental screening record. As shown in Table 2, most children (>97.7%) had normal gums at all visits” (p. e26).</p> <p><i>Dietary Practices:</i> “Table 3 shows a significantly greater proportion of urban participants drank more than 1 sweet drink per day and used a bottle throughout the study ($P < .05$). Sippy cup use decreased throughout the study period in both groups. Furthermore, a greater proportion of children in the urban group consumed fruits and vegetables daily ($P < .05$). Finally, although a significantly greater proportion of urban children consumed high sugar foods more than once a day at the first and second visits ($P < .05$), both groups had similar consumption habits by the third visit” (p. e26).</p> <p><i>Oral Health Habits:</i> “A significantly greater proportion of urban participants reported visiting</p> |

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| | <p>the dentist within the past 6 months at each visit ($P < .05$). Reported daily tooth brushing or cleaning also increased in both groups from visit 1 to visit 3; however, no differences between the rural and urban participants were reported” (p. e26).</p> |
| <p>Authors’ Discussion and Conclusion</p> | <p><i>Idea one:</i> Workforce capacity models used to expand oral healthcare services to vulnerable populations may require allied health professionals to enlarge their scope of practice, acquire additional oral health-related education and training, and clearly establish roles and responsibilities with additional collaborative professionals.</p> <p><i>Idea two:</i> Preventive oral health care and education at WIC sites can aid to address access barriers of oral healthcare services that is often experienced by Medicaid recipients.</p> <p><i>Idea three:</i> Fluoride varnish is effective and well-supported preventive oral health delivery in reducing childhood dental caries among high-risk children.</p> <p><i>Idea four:</i> Cost benefits of preventive oral health services via WIC sites led and has led to reduced dental costs for low-income families.</p> <p><i>Idea five:</i> “In addition, participation in WIC was associated with increased use of preventive and restorative oral health services and less use of emergency services” (p. e28).</p> <p><i>Idea six:</i> “Although the cost benefits of preventive oral health care have been recognized, the sustainability of these programs is dependent upon expansion of Medicaid services, or in some cases, increasing the reimbursement rates in recognition of the future cost savings” (p. e28).</p> <p>Conclusion: “Barriers to access remain a significant impediment toward eliminating dental health disparities in low-income children. Our project demonstrated that a nurse practitioner-dietitian delegated work model at WIC sites increased dental workforce capacity by providing access for preventive oral health services, including topical fluoride application, to low-income children, and oral health education and dietary counseling to their parents or guardians. It also suggested that WIC sites could become excellent clinical training sites for nursing, dietetic, dental, and medical education in selected oral health care services” (p. e28).</p> |
| <p>Authors’ Limitations</p> | <p>“Our project was limited in its lack of an untreated control group to assess the impact of the project on oral health. Thus, further studies are necessary to confirm our findings. In addition, we experienced a drop in the number of children over time. We did not assess the reason for this attrition; however, because the mean age of the participants was 3.15 years by the third visit, many of the children might have simply started preschool and no longer attended the WIC visits with their mothers” (p. e28).</p> |
| <p>Authors’ Implications For Practice and Future Research</p> | <p>“Because the lack of dentists accepting individuals covered by public insurance represents a significant barrier to access, it is anticipated that increasing reimbursement rates will increase access to care...Our project was limited in its lack of an untreated control group to assess the impact of the project on oral health. Thus, further studies are necessary to confirm our findings” (p. e28).</p> |

Critical Appraisal: Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status.

| | Summary |
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| APA Reference | Wilson, A., Brega, A., Campagna, E., Braun, P., Henderson, W., Bryant, L., Batliner, T., Quissel, D., & Albino, J. (2016). Validation and impact of caregivers' oral health knowledge and behavior on children's oral health status. <i>Pediatric Dentistry</i> , 38(1), 47-54. https://aapd.publisher.ingentaconnect.com/content/aapd/pd |
| Abstract | <p>"Purpose—The purpose was to validate oral health knowledge and behavior measures from the Basic Research Factors Questionnaire, developed to capture specific themes contributing to children's oral health outcomes and influence of caregivers. Methods—Data were collected as part of a randomized clinical trial (N=992) aimed at reducing dental caries in young children. Participants were American Indian/Alaska Native caregivers with a child aged three to five years enrolled in a Navajo Nation Head Start Center. Caregivers completed the questionnaire at enrollment with concomitant evaluation of children for decayed, missing, and filled tooth surfaces (dmfs). Oral health knowledge and behavior outcomes were compared with convergent measures (participant sociodemographic characteristics, oral health attitudes, indicators of oral health status). Results—Caregiver oral health knowledge was significantly associated with education, income, oral health behavior, and all but one of the oral health attitude measures. Behavior was significantly associated with several measures of oral health attitudes and all but one measure of oral health status. As the behavior score improved, dmfs declined, child/caregiver overall oral health status improved, and pediatric oral health quality of life improved. Conclusions—Questionnaire measures were valid for predicting specific caregiver factors potentially contributing to children's oral health status" (p. 1).</p> |
| Your Focused Question and Clinical Bottom Line | <p><i>Question:</i> What contextual and caregiver factors are associated with oral health outcomes and hygiene behaviors of low-income American Indian children? <i>Clinical Bottom Line:</i> Caregiver oral health behavioral adherence is significantly associated with the oral health outcomes of low-income children. Improving caregiver oral health literacy is one method to improving oral health behavioral adherence of children and caregivers; therefore, supporting oral health outcomes of children.</p> |
| Your Lay Summary | <p>A 2016 study was done to analyze the relationship between American Indian caregiver knowledge, beliefs, and behaviors on their children's oral health. A questionnaire called the Basic Research Factors Questionnaire (BRFQ) was used. This study tested the accuracy of analyzing the relationship between caregiver responses. They found that the BRFQ was reliable and accurate. It evaluated caregiver factors on children's oral health outcomes. Findings stated:</p> <ul style="list-style-type: none"> ● Caregiver knowledge is associated with positive oral health attitudes. ● Caregiver knowledge is associated with oral health behaviors and habits. ● Caregiver self-confidence is associated with dentist recommended oral health behaviors. <p>Addressing caregiver oral health knowledge, attitudes, and behaviors can benefit children's oral health. This questionnaire can be used with American Indian caregivers and potentially other cultures. And, can be used to gain baseline knowledge on how to best educate caregivers about oral health. We greatly appreciate you taking the time to fill out this questionnaire as each response is carefully reviewed to understand how to best serve your family.</p> |
| Your Professional Summary | <p>Survey data gathered during a randomized control trial (RCT) was evaluated to test psychometric properties of the Basic Research Factors Questionnaire (BRFQ) in associating caregiver knowledge, beliefs, and behaviors to their child(ren)'s oral health</p> |

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| | <p>status. 992 caregivers completed BRFQ prior to the Head Start Center intervention study. Most caregivers were American Indian, the child's mother, completed high school, and had low income. Construct, convergent, and divergent validity measures were tested to evaluate BRFQ associations. Results concluded BRFQ measures were valid and reliable for identifying significance of caregiver knowledge and behaviors on children's oral health status. Key findings concluded that (1) oral health knowledge was significantly associated with oral health attitudes, (2) oral health knowledge was negatively associated with perceived barriers, (3) greater self-efficacy scores were significantly associated with behavioral adherence, (4) caregiver oral health knowledge was <i>not</i> significantly associated with oral health outcomes, (5) oral health behaviors were significantly associated with oral health status of children.</p> <p>Strengths of this study included a detailed methods section with rationale for specific measures, and data analysis tools. Validated measures were well-supported by health behavior models. Study results were compared with another American Indian tribe to generalize findings.</p> <p>Limitations of this study included caregiver-reported questionnaire subject to bias. Study identified two groups of caregiver-child dyads in the original RCT but did not identify key differences between the intervention and control group. Study could have been strengthened if results of the RCT were compared with caregiver responses at baseline and completed after the intervention. Implications of this study validate the use of the BRFQ when analyzing American Indian caregiver knowledge, beliefs, and behaviors that may influence low-income children's oral health outcomes. Future studies should evaluate the effectiveness of this assessment tool with various cultural groups.</p> |
| | <p>Critical Appraisal</p> |
| <p>Stated Purpose or Research Question</p> | <p>"Thus, the objective of this study was to validate oral health knowledge and behavior measures developed to capture specific themes contributing to children's oral health outcomes in relation to AI caregivers" (p. 2).</p> |
| <p>Background Literature</p> | <p><i>Key points of the intro section:</i></p> <ul style="list-style-type: none"> ● Oral health disparities exist among low socioeconomic families, and families identified as indigenous or ethnic minorities. ● "American Indians/Alaska Natives (AI/AN) have the highest prevalence of childhood caries" (p. 2). ● Models suggest expanding upon traditional models and using analytical approaches to analyzing "biologic, social, and behavioral determinants for the child-family unit" (p. 2) as it relates to oral health outcomes. ● Caregivers influence the oral health of their children. ● Validated caregiver instruments/assessment can be beneficial to examine AI/AN caregiver oral health knowledge related to their children's oral health behaviors/outcomes and targeting constructs associated with poor oral health of at-risk children. <p><i>Theoretical perspective:</i> Health behavior models: Social Cognitive Theory & the Health Belief Model.</p> |
| <p>Research Design</p> | <p><i>Research design:</i> Cluster randomized trial</p> <p><i>Rationale for the design:</i> "As such, this study provides an important step in validating oral health knowledge and behavior measures in a population with one of the highest risks for poor oral health outcomes" (p. 2).</p> <p><i>For quantitative primary research, AOTA Level of Evidence:</i> Level I</p> |

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| Sampling | <p><i>Sampling method used and the rationale (if given):</i> “HSCs were stratified by agency (region of the reservation) and whether the HSC had one or multiple classrooms. Participants were recruited as caregiver-child dyads” (p. 2).</p> <p><i>Inclusion criteria:</i> “Children were eligible if aged three to five years, enrolled in a participating HSC, and their parent/caregiver consented to participate” (p. 2).</p> <p><i>Exclusion criteria:</i> Not reported.</p> <p><i>Power/sample size estimate:</i> Not reported.</p> |
| Sample | <p><i>Number of Participants (Total and Subgroups):</i> The final sample included 39 Head Start Centers (HSCs) (19 control and 20 intervention HSCs with 26 classrooms/group).</p> <p><i>Characteristics of the Sample (Gender, Race/Ethnicity, Diagnosis/Disability):</i> “The majority of caregivers were the child’s mother (77 percent), and the caregiver age range was 19–88 years (mean=32 years). Fifty-one percent of children were female, and the age range was 3–5 years (mean=3.6 years). Eighty-four percent of caregivers had at least a high school diploma or GED, 61 percent had household incomes below \$15,000, and 28 percent were employed. Ninety-eight percent of caregivers reported being AI, and 97 percent reported being members of the Navajo Nation. Ninety-nine percent of children were AI (remaining one percent were AN), and 95 percent were members of the Navajo Nation. Due to the small percentage of AN children and caregivers, the term, “AI” will be used henceforth in referring to the study population” (pp. 5-6).</p> <p><i>Dropouts:</i> Not reported.</p> |
| Groups | <p><i>Types of groups:</i> Intervention groups</p> <p><i>Group one description:</i> 19 control Head Start Centers with 26 classrooms/group.</p> <p><i>Group two description:</i> 20 intervention Head Start Centers with 26 classrooms/group.</p> <p>Group descriptions were not reported in this study; however, both the intervention and control group participants (caregivers) completed the Basic Research Factors Questionnaire (BRFQ) at enrollment within the program.</p> |
| Method | <p><i>Primary methods to answer research question:</i> Survey (Basic Research Factors Questionnaire)</p> <p>“Caregivers completed the BRFQ at enrollment and annually for two years with concomitant dental assessment of all children by calibrated evaluators to measure decayed, missing, and filled tooth surfaces (dmfs)” (p. 3).</p> <p>BRFQ was performed during the randomized control trial (RCT). Caregivers completed the 190-item questionnaire on a computer that was narrated by a Navajo tribal member. Items in the questionnaire included dental knowledge, attitudes, behaviors, sociodemographic characteristics, and psychosocial factors. Data was evaluated after the RCT.</p> |
| Measurement and Outcomes | <p>“Validation analyses were conducted to assess BRFQ measures of caregiver oral health and knowledge as related to childhood caries” (p. 3).</p> <p><i>Measure:</i> Oral Health Knowledge and Behavior, caregiver’s oral health knowledge and behaviors associated with recommended practices, construct validity, 14 questions on BRFQ related to caregiver knowledge and 11 questions related to recommended oral health behaviors. Cronbach’s alpha for oral health knowledge scale was 0.51 and oral health behavior scale was 0.55.</p> <p><i>Measure:</i> Participant Characteristics; sociodemographic characteristics, such as age, gender, caregiver educational attainment, and household annual income; convergent validity; no frequency data reported</p> |

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| | <p><i>Measure:</i> Oral Health Attitudes; Self-efficacy (12 items), Perceived importance of recommended oral health behavior (12 items), Participant locus of control (9 items), and Health Belief Model (16 items); convergent validity.</p> <p><i>Measure:</i> Divergent measures; baseline survey year (2011 or 2012), Head Start classrooms, and Head Start agency location; divergent validity.</p> |
| Results | <p><i>Description of the sample:</i> “The final analysis sample included 992 dyads. Some analyses included fewer than 992 participants, due to unanswered questions. Missing data were minimal (ranging from 0–3.4 percent) except for two variables. Family income information was missing for 15.4 percent of dyads. Data on dental visits in the past year for treatment of a cavity or toothache were missing for 12.7 percent of dyads...The majority of caregivers were the child’s mother (77 percent), and the caregiver age range was 19–88 years (mean=32 years). Fifty-one percent of children were female, and the age range was 3–5 years (mean=3.6 years). Eighty-four percent of caregivers had at least a high school diploma or GED, 61 percent had household incomes below \$15,000, and 28 percent were employed. Ninety-eight percent of caregivers reported being AI, and 97 percent reported being members of the Navajo Nation. Ninety-nine percent of children were AI (remaining one percent were AN), and 95 percent were members of the Navajo Nation. Due to the small percentage of AN children and caregivers, the term, “AI” will be used henceforth in referring to the study population” (pp. 5-6).</p> <p><i>Analysis/theme one:</i> Convergent validity and participant characteristics – “Oral health knowledge increased with greater caregiver education ($p<0.001$) and household income ($p<0.001$)” (p. 6).</p> <p><i>Analysis/theme two:</i> Convergent validity and participant characteristics – “The oral health behavior score was not related to household income, although marginally associated with caregiver education in a positive direction ($p =0.07$)” (p. 6).</p> <p><i>Analysis/theme three:</i> Convergent validity and oral health attitudes – “A positive association was found between oral health knowledge and behavior scores... Oral health knowledge was significantly associated with all oral health attitude measures ($p<0.001$), except for perceived susceptibility from the Health Belief Model ($p=0.814$)” (p. 6).</p> <p><i>Analysis/theme four:</i> Convergent validity and oral health attitudes – “Knowledge scores were negatively associated with perceived barriers, such that caregivers with greater knowledge perceived fewer barriers to engaging in recommended oral health behaviors” (pp. 6-7).</p> <p><i>Analysis/theme five:</i> Convergent validity and oral health attitudes – “Larger values for self-efficacy and importance measures were associated with better behavioral adherence ($p<0.001$)” (p. 7).</p> <p><i>Analysis/theme six:</i> Convergent validity and indicators of oral health status – Caregiver oral health knowledge was not significantly associated with oral health outcomes of decayed, missing, and filled tooth surfaces (dmfs), oral health status, pediatric quality of life, and dental visits.</p> <p><i>Analysis/theme seven:</i> Convergent validity and indicators of oral health status – “oral health behavior score was related to oral health status” (p. 7) measures of dmfs reduction ($p<0.004$), improvements in child and caregiver oral health status ($p<0.001$), and PQOL improvements ($p<0.001$).</p> <p><i>Analysis/theme eight:</i> There was a significant “association between oral health behavior score and agency ($p<0.022$)” (p. 7).</p> |
| Authors’ Discussion | <p><i>Idea one:</i> “Results demonstrated knowledge and behavior items from the BRFQ were valid and</p> |

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| and Conclusion | <p>reliable as correlates of oral health status for children of AI caregivers from the Navajo Nation” (p. 7).</p> <p><i>Idea two:</i> “Behavioral adherence was highly associated with oral health attitudes encompassing self-efficacy, perceived importance of, benefits of, and barriers to recommended oral health behavior, and perceived susceptibility to poor oral health outcomes” (pp. 7-8).</p> <p><i>Idea three:</i> “To assess response variation from heterogeneity among tribal groups, outcomes from the current study involving Navajo caregivers were compared with earlier pilot work involving caregivers from the Northern Plains tribal region.¹² Results were similar for both tribes, with oral health knowledge being reasonably high and engagement in optimal oral health behavior comparatively lower” (p. 8).</p> <p>Conclusion: “The results of this investigation support the following conclusions: 1. The BRFQ knowledge and behavior items showed convergent and divergent validity with other measures in expected directions and provided meaningful information related to caregivers’ influence on the oral health status of young children in an AI population. 2. Findings suggest greater emphasis on development of caregivers’ adherence to oral health behaviors will advance children’s oral health status through promoting a positive shift towards improved caregiver self-efficacy and attitudes related to perceived barriers and benefits of recommended oral health behaviors. As such, the BRFQ measures can be used to inform oral health interventions and public health programs aimed at reducing oral disparities among AI/AN populations and offer potential value for vulnerable children from other low socioeconomic status and indigenous and ethnic minority groups” (p. 8).</p> |
| Authors’ Limitations | <p>“Limitations of the study include the potential for results to be non-generalizable to other AI/AN tribal groups. To date, the BRFQ has been used with a large Northern Plains tribal group and the Navajo Nation tribal group. Outcomes for both tribal groups reflected similarity in knowledge and behavior, despite each group having a distinct identity culturally and demographically. Thus, expanding future studies to include a broader range of tribal groups is recommended” (p. 8).</p> |
| Authors’ Implications For Practice and Future Research | <p>“Thus, expanding future studies to include a broader range of tribal groups is recommended... As such, the BRFQ measures can be used to inform oral health interventions and public health programs aimed at reducing oral disparities among AI/AN populations and offer potential value for vulnerable children from other low socioeconomic status and indigenous and ethnic minority groups” (p. 8).</p> |

Critical Appraisal: Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis.

| | Summary |
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| APA Reference | Knorst, J. K., Sfreddo, C. S., de F Meira, G., Zanatta, F. B., Vettore, M. V., & Ardenghi, T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. <i>Community dentistry and oral epidemiology</i> , 49(2), 95–102. https://doi.org/10.1111/cdoe.12616 |
| Abstract | <p>Objectives To systematically review observational studies assessing the association between socioeconomic status (SES) and oral health-related quality of life (OHRQoL) in children, adolescents and adults. Methods Electronic searches were performed in the PubMed, Embase, Web of Science, LILACS and Scopus databases for articles published up to September 2020. Two independent reviewers performed the search and critical appraisal of the studies. The inclusion criteria were observational studies that evaluated the effect of SES on the OHRQoL in all age groups using validated methods. Quality assessment was conducted using the Newcastle-Ottawa Scale. Data were extracted for meta-analysis followed by a meta-regression analysis. A random-effects model was used to estimate the pooled calculate prevalence ratio (PR) and respective 95% confidence intervals (CI) for each study. Results The search strategy retrieved 6114 publications. Some 139 articles met the eligibility criteria and were included in the systematic review. Of those, 75 were included in the general meta-analysis they represented a total sample of 109 269 individuals. People of lower SES had worse OHRQoL (PR 1.30; 95% CI 1.26-1.35). In the meta-analyses of different subgroups, an association was found between low SES and worse OHRQoL in countries of all economic classifications, in all age groups and irrespective of the socioeconomic indicator used. A socioeconomic gradient in OHRQoL was also observed, in which the lower the individuals' socioeconomic position, the poorer their OHRQoL. Conclusions Individuals of low SES had poorer OHRQoL, regardless of the country's economic classification, SES indicator and age group. Public policies aiming to reduce social inequalities are necessary for better OHRQoL throughout life" (p. 95).</p> |
| Your Focused Question and Clinical Bottom Line | <p><i>Question:</i> What contextual and environmental factors influence oral health related quality of life of low-income people? <i>Clinical Bottom Line:</i> Socioeconomic status is a complex, environmental construct that significantly influences the oral health-related quality of life of low-income individuals across the lifespan.</p> |
| Your Lay Summary | <p>A study was published this year (2021) to review the relationship between socioeconomic status (SES) and oral health-related quality of life. SES includes factors such as income, education, and careers. Oral health-related quality of life (OHRQoL) is the influence that oral diseases have on overall health, well-being, and daily activities. These two factors are related because of the influence income and education have on accessing dental care services and materials needed for oral hygiene. This study wanted to test the relationship of these two factors across the globe for all age groups. They found an important relationship between SES and OHRQoL regardless of age and country. These findings suggest that each country should address SES barriers to OHRQoL, including cost and education. Please contact the Minnesota Department of Health for more information on how your community can best support your oral health.</p> |
| Your Professional Summary | <p>This systematic review and meta-analysis synthesized findings from cross-sectional and cohort studies to analyze the associations between socioeconomic status (SES) and oral-health related quality of life (OHRQoL). Researchers gathered a total of 6114 publications, of which they included 139 for systematic review and 75 for meta-analysis. Publications were gathered for all age groups and across 22 different</p> |

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| | <p>countries. Key findings from the analysis indicated a significant relationship between low socioeconomic status and oral health-related quality of life for children, adolescents, and adults regardless of the country's economic classification.</p> <p>Strengths of this study include a clear methodology related to the collection of literature related to the PECO question and protocols implemented to reduce bias. Additionally, researchers had a high rate of consistency in gathering related publications (Kappa coefficients of 0.93 for titles and 0.92 for abstracts). Another strength was the integration of publications across 22 different countries for literature related to various age groups. Limitations of this study include the isolation of cross-sectional and cohort studies. This review could be strengthened if additional research study types were implemented within the analysis to validate both correlational and causal relationships. Research analysis was very concise; however, more detail could have been provided to further discuss differences across SES constructs and identify similarities and differences between each of the oral health-related quality of life assessments used with participants. Implications of this study indicate the need for public health professionals to support both personal and environmental socioeconomic-related factors that influence oral health outcomes for low-income populations across the lifespan.</p> |
| | Critical Appraisal |
| Stated Purpose or Research Question | "Accordingly, our aim was to systematically review the evidence from observational studies assessing the association between SES and OHRQoL in children, adolescents and adults, and additionally, to assess which socioeconomic measures influence OHRQoL" (p. 2). |
| Background Literature | <p><i>Key points of the intro section:</i></p> <ul style="list-style-type: none"> • Oral health-related quality of life is theoretically explained to be influenced by "biologic, individual, and environmental factors, such as socioeconomic factors (SES)" (p. 2). • "SES is a complex construct which comprises aspects such as income, education, occupation, power and prestige,4 producing different health effects across populations" (p. 2). • Previous studies have evaluated the relationship between low SES and poor oral health-related quality of life (OHRQoL) • This was the first systematic review that synthesized "evidence according to different age groups, populations and socioeconomic indicators. OHRQoL" (p. 2). <p><i>Theoretical perspective:</i> No specific name provided. Multidimensional construct and "theoretical model that proposes that biological, individual and environmental factors, such as socioeconomic status (SES) influence OHRQoL" (p. 2).</p> |
| Research Design | <p><i>Research design:</i> Systematic review and meta-analysis</p> <p><i>Rationale for the design:</i> "This study followed the Cochrane Handbook guidelines and is reported according to the Meta-Analyses Of Observational Studies in Epidemiology (MOOSE) group. A review protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO; protocol number: CRD 42017063942)" (p. 2).</p> <p><i>For reviews of research, AOTA Level of Evidence:</i> Level I</p> |
| Method | <p><i>Primary methods to answer research question</i></p> <p><i>Variables:</i> "Population (P): children, adolescents and adults who were also clinically evaluated; exposure (E): low SES; comparison (C): participants with high SES; and outcome (O): OHRQoL" (p. 2).</p> |

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| | <p><i>Keywords:</i> Different socioeconomic measures and oral health-related quality of life</p> <p><i>Databases:</i> “Electronic searches were performed in the PubMed/MEDLINE, Embase, ISI Web of Science, LILACS and Scopus databases for articles published up to September 2020” (p. 2).</p> <p><i>Procedures:</i> “The searches used a combination of controlled vocabulary and key words, including different SES measures and OHRQoL (Table S1). A manual search of the reference lists of the included articles in the review was also done. According to our analytical approach, only studies using individual-level data were included” (p. 2).</p> |
| Filters | <p><i>Research Designs included and not included:</i> “According to our analytical approach, only studies using individual-level data were included...The methodological quality of the included studies was assessed by two reviewers independently (GFM and JKK) using the Newcastle-Ottawa Scale (NOS)²⁵ for assessing the quality of observational studies and the adapted NOS for cross-sectional studies” (pp. 2-3).</p> <p><i>Inclusion and exclusion criteria:</i> “Two reviewers (GFM and JKK) independently screened the titles and abstracts of retrieved papers and selected those with potential for inclusion. Full-text analysis was conducted according to the following criteria: (a) cross-sectional or longitudinal studies exploring the association between SES and OHRQoL without restrictions for the year of publication or language; (b) studies reporting association analyses using one or more socioeconomic variables; (c) studies that evaluated OHRQoL using validated questionnaires or presenting psychometric data; and (d) studies investigating children, adolescents, or adults. Studies that included particularly vulnerable subpopulations (people with psychomotor disorders, cleft palate, pregnant women or indigenous) were excluded” (p. 2).</p> <p><i>Total references found:</i> “The initial search retrieved 6114 articles. After screening titles and abstracts, 203 full-text articles were selected for further assessment. The search of the reference list of selected papers did not retrieve any additional relevant papers. After the full-text analysis, 139 articles were included in the systematic review (Figure 1), representing a total of 189 171 individuals. Finally, a total of 75 articles were included in the quantitative synthesis (109 269 individuals)” (p. 3).</p> <p><i>Process for eliminating references:</i> “Papers fulfilling the selection criteria were processed for data extraction. Disagreements between reviewers were resolved by discussion. If a disagreement persisted, the judgement of a third reviewer (CSS) was considered decisive. The reliability of the reviewers was tested on 10% of the papers analysed during the selection process. Kappa coefficients for agreement between the reviewers were 0.93 for the titles and abstract and 0.92 for the full texts” (p. 2).</p> |
| Results | <p><i>Description of the articles:</i> “Of the 139 studies included, 127 were cross-sectional and twelve were longitudinal. The studies have been conducted in 22 different countries, with the majority conducted in Brazil (n = 87). Sample size ranged from 67 to 17 398. The studies focused on children (n = 39), adolescents (n = 46) and adults (n = 54). The age of individuals in the studies ranged from 1 to 79 years. The most used measures of SES were education level (n = 117), household income (n = 99), socioeconomic indices (e.g. social deprivation index; n = 18), type of school (n = 13) and household crowding (n = 13). The most used questionnaires for the evaluation of OHRQoL were the OHIP-14 (n = 35), OIDP (n = 25), ECOHIS (n = 23) and the</p> |

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| | <p>CPQ8-10 or CPQ11-14 (n = 44). Most studies (n = 116; 84.1%) had a low risk of bias” (p. 3).</p> <p><i>Analysis/theme one:</i> “In the random-effects model, low-SES individuals had a 30% higher prevalence of negative impacts on OHRQoL (PR 1.30; 95% CI 1.25-1.36)” (p. 3).</p> <p><i>Analysis/theme two:</i> “The analysis revealed significant heterogeneity across studies ($I^2 = 96.0\%$; $P < .001$).</p> <p><i>Analysis/theme three:</i> “In regard to study design, cross-sectional studies found an association between low SES and negative impact on OHRQoL (PR 1.26; 95% CI 1.26-1.27). In the meta-analyses by population group, there were associations between low SES and worse OHRQoL in children (PR 1.26; 95% CI 1.16-1.37), adolescents (PR 1.26; 95% CI 1.16-1.36) and adults (PR 1.47; 95% CI 1.30-1.65). An association between SES and OHRQoL was demonstrated independently of the country’s economic classification” (p. 4).</p> |
| <p>Authors’ Discussion and Conclusion</p> | <p><i>Idea one:</i> “The global metaanalysis showed that people from low SES had worse OHRQoL than their counterparts” (p. 6).</p> <p><i>Idea two:</i> “Income is considered a strong factor that can reflect differences in access to material circumstances (e.g. housing, material goods, physical working place), and consequently, it results in health inequalities” (p. 6).</p> <p><i>Idea three:</i> “Our findings showed the negative association of low SES and OHRQoL in accordance with previous studies” (p. 6).</p> <p><i>Idea four:</i> “Thus, people in socioeconomic disadvantage are susceptible to material and psychosocial risk factors that can generate negative impacts on the functional, psychological and social dimensions of OHRQoL” (p. 6).</p> <p><i>Idea five:</i> “Thus, oral diseases especially affect disadvantaged and socially marginalized populations and consequently, their OHRQoL, independently of age group” (p. 7).</p> <p><i>Consistent findings:</i></p> <ul style="list-style-type: none"> • “In the present systematic review, household income and education level (individual or parents’ education) were the most commonly used measure of SES” (p. 6). • “However, the impact of the SES level on OHRQoL was twice as high in lower-middle-income countries” (p. 6). • “Our findings demonstrated that people with low and middle SES levels have worse OHRQoL than counterparts with high SES, indicating a socioeconomic gradient in OHRQoL” (p. 7). <p><i>Inconsistent findings</i></p> <ul style="list-style-type: none"> • “However, the meta-analysis of cross-sectional studies found an association between low SES and worse OHRQoL, whereas that association was nonsignificant in the pooled estimates of cohort studies” (p. 7). • “In addition, the main source of heterogeneity in the global meta-analysis was the type of study (27.5%)” (p. 6). <p>Conclusion: “The systematic review provides evidence that low SES is associated with poorer OHRQoL in all age groups. Overall, the impact of oral conditions on quality of life was 30% greater in individuals with low SES. Additionally, significant impacts on OHRQoL were apparent in countries of both economic classifications and regardless of the socioeconomic indicator. A socioeconomic gradient in OHRQoL was also observed, in which the lower the individuals’ socioeconomic position, the poorer their OHRQoL. Public health policies, such as strategies to improve access to health</p> |

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| | service and social support, should be implemented to tackle health inequalities at individual and macro-regional levels, improving OHRQoL throughout life” (p. 7). |
| Authors’ Limitations | “The present review has limitations that should be considered. Most of the included studies were cross-sectional in design, which precludes causal inferences. However, the meta-analysis of cross-sectional studies found an association between low SES and worse OHRQoL, whereas that association was nonsignificant in the pooled estimates of cohort studies. This may be due to the low number of cohort studies included in the meta-analysis. In addition, the main source of heterogeneity in the global meta-analysis was the type of study (27.5%). In this sense, cross-sectional studies involving SES and health might be biased and may not reflect causal relationships due to the heterogeneity of socioeconomic measures. Thus, future systematic review studies on this topic should encompass a larger number of longitudinal studies to clarify this issue. Another aspect to consider is the type of data analysis used, adjustment for different confounders and the use of different instruments in the studies, which may have affected the findings and caused heterogeneity. However, all included studies used different cross-culturally adapted questionnaires to assess OHRQoL with appropriate psychometric properties, which suggest that the OHRQoL instruments were reliable and valid. In addition, meta-regression analysis was performed to explain the sources of discrepancies among the studies” (p. 7). |
| Authors’ Implications For Practice and Future Research | “Public health policies, such as strategies to improve access to health service and social support, should be implemented to tackle health inequalities at individual and macro-regional levels, improving OHRQoL throughout life” (p. 7). |

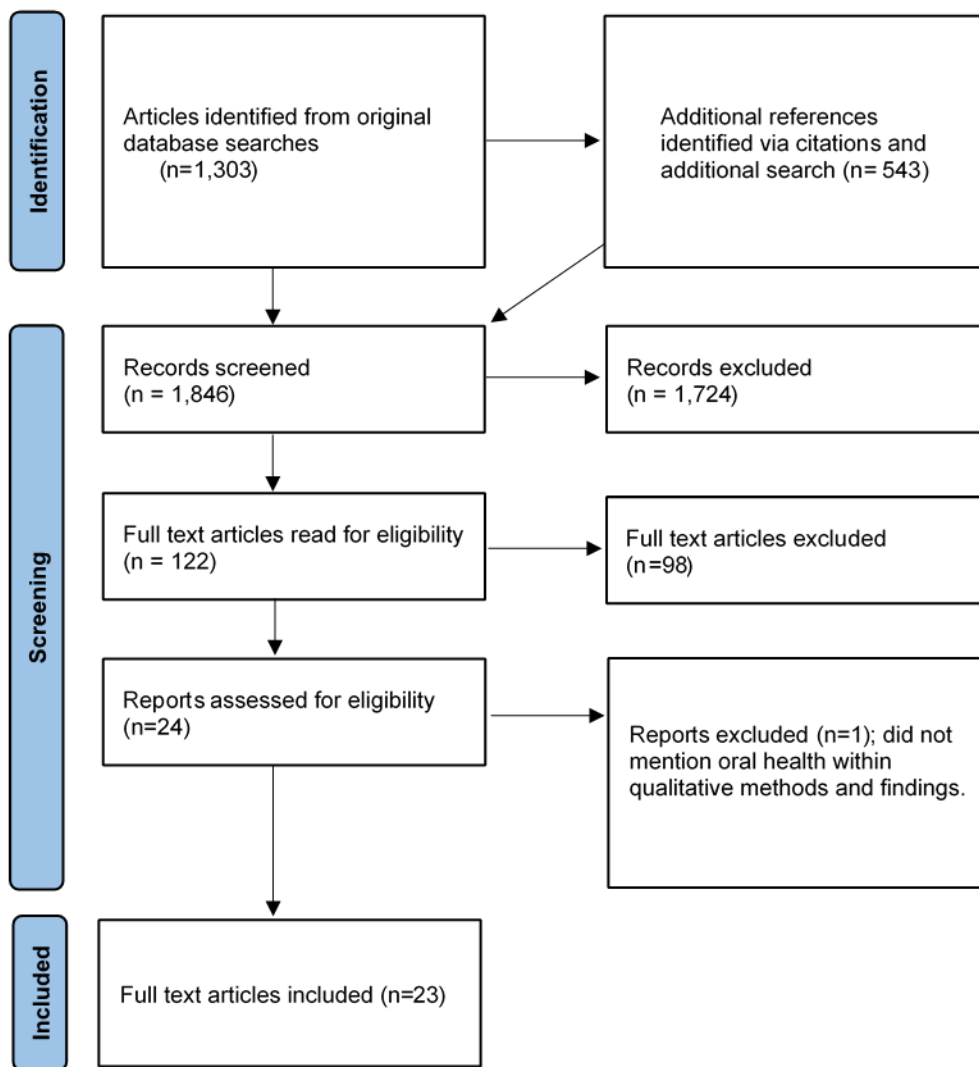
Scoping Review Appendix I: PRISMA Article Selection Flow Chart

Figure 1. Flowchart of the process of including and excluding articles within this scoping review.

Appendix C – Standardized Child Clinic Questionnaire**School:****Date:****Name:****DOB:****Grade:**

1. Is this your first time visiting the dentist? **YES NO**

2. Do you have a toothbrush at home? **YES NO**

3. If yes, how often do you brush your teeth? **CIRCLE YOUR ANSWER(S) BELOW**
 - A) In the morning
 - B) At night
 - C) Both, in the morning and at night
 - D) Every other day
 - E) One time per week
 - F) Other _____

4. Do you have floss at home? **YES NO**

5. If yes, how often do you floss at home? **CIRCLE YOUR ANSWER(S) BELOW**
 - A) In the morning
 - B) At night
 - C) Both, in the morning and at night
 - D) Every other day
 - E) One time per week
 - F) Other _____

6. Circle the face below that BEST match how you feel BEFORE you see the dentist.



7. Circle the face below that BEST match how you feel AFTER you saw the dentist.



8. Do you have any questions?

STOP HERE – FOR PROVIDER USE ONLY

Child presents as:

High risk Urgent risk Non-urgent risk Other

Additional notes/comments:

Appendix D – Oral Health Social Story: *Going to the Dentist*

Narrated Oral Health Social Story - *Going to the Dentist*



Printable Oral Health Social Story – *Going to the Dentist*

*Double click the image below to view the full social story

Going to the Dentist



Preparing for My Dental Visit

Appendix E – Oral Health & School Professional Survey

*Double click the image below to view the full survey

Oral Health & School Professionals

https://docs.google.com/forms/u/0/d/1P0lwjNsX5_KO7td2IxCWz_X...

Oral Health & School Professionals

The purpose of this survey is to understand the supports and barriers to implementing oral health habits and routines in the school environment.

Based on the important role of school professionals in guiding and cultivating healthy habits, your responses are essential for Ready, Set, Smile to both educate interprofessional team members and cater our services to best partner with your school.

Responses are anonymous and participation in this survey is voluntary.

This survey should take 2 to 5 minutes to complete. Please respond by INSERT DATE

* Required

Oral
Health
Knowledge
& Beliefs

Oral health knowledge and beliefs are understandings of activities to maintain or improve oral health, such as brushing teeth, flossing, going to the dentist, eating healthy foods, etc.

1. How important is oral health to you?

Mark only one oval per row.

| | Value of Importance |
|---------------------------------|------------------------|
| Not at all important | <input type="radio"/> |
| Somewhat important | <input type="radio"/> |
| Moderately important | <input type="radio"/> |
| Very important | <input type="radio"/> |

Appendix F – Doctoral Capstone Poster & Narrated Link

Narrated Poster: <https://www.youtube.com/watch?v=cwWwx2ieMAC>

Impact Of Integrated Education On Child Oral Health

Rachel McPherson, Occupational Therapy Student
Faculty Advisor: Jennifer Hutson, PhD, OTR/L, ATP, Capstone Mentors: Stephanie de Sam Lazaro, OTD, MA, OTR/L & Ann Copeland, MPH, Operations Director
St. Catherine University

BACKGROUND

- Oral health (teeth, gums, and oral cavity) impacts childrens' participation and performance in education, eating, and socialization (speech, self-confidence, pain)^{1,2,3,6,7}.
- Ready, Set, Smile's (RSS) mission is to serve children and families from low socioeconomic communities who are at risk of developing oral health diseases⁸.
- Interdisciplinary oral health teams empower children through oral health education and prevention services to support positive oral health experiences^{3,4,10}.

OUTCOMES

Preschool Education & Dental Visit Preparation

- Educated 16 classrooms within 5 Minneapolis preschools (ages 1 yr. to 10 yrs.) about brushing habits and visiting the dentist prior to childrens' dental exam.
- RSS team texted 88 caregivers narrated oral health social story to prepare children for upcoming dental visit (27 views).

Preliminary Results from Child Clinic Questionnaire (CCQ)

- 378 children, Pre-K to 8th grade completed CCQ from 7 sites (3 sites were stand-alone preschools).

IMPLICATIONS

Social Story

- Social story might be a useful tool to educate children and manage dental-related anxiety in the classroom and dental clinic. Further study is needed to determine its effect.

All Children

- Children reported similar dental experiences regardless of classification.
- Current best practices for brushing and flossing have not been met.

High Risk Children

- Identified improvement areas include establishing sustainable habits and routines for achieving optimal oral health. For example, brushing in the morning and night with an emphasis on the importance of night-time brushing, and access to floss at home.

PURPOSE


Use interprofessional collaboration and educational methods to understand:

- (1) childrens' dental experiences, and
- (2) current access & utilization of oral health practices for children living within lower income communities.

APPROACH


- Developed educational materials: social story and Child Clinic Questionnaire (CCQ) to prepare children for their dental visit.
- Assessed social story using health literacy tools.
- Analyzed childrens' dental experiences and oral health habits using CCQ, which included:
 - Novel Animated Emoji Scale⁵
 - Yes/No questions
 - Frequency-based questions
 - Open-ended questions
 - Checkbox for identifying child's classification.
- Evaluated CCQ responses using descriptive and categorical analysis.

Novel Animated Emoji Scale⁵



0 2 4 6 8 10

CHILD CLASSIFICATIONS & RISK LEVEL



■ High Risk (32%) ■ Non-Urgent (48%) ■ Urgent (16%) ■ Other (4%)

Note: 387 children (includes infants and toddlers) classified accordingly.

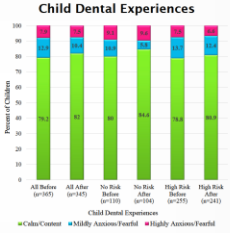
High Risk - history or presence of cavities, white spot lesions, multiple medications, poor oral hygiene, an oral appliance, and/or special needs⁶.

Non-Urgent Referral - minor decay treated with a simple filling, no pain, and/or minimal infection or swelling (A, Della Torre & R. McPherson, personal communication, July 11, 2022).

Urgent Referral - pain, swelling, infection, and/or a non-restorable tooth requiring a referral for extraction (A, Della Torre & R. McPherson, personal communication, July 11, 2022).

Other - no history or presence of cavities, and fair to good oral hygiene⁶.

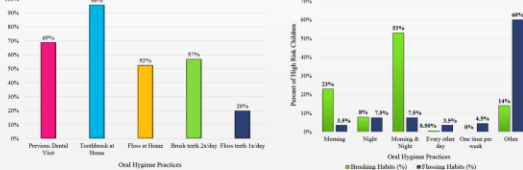
CHILD DENTAL EXPERIENCES



■ Calm/Content ■ Mildly Anxious/Fearful ■ Highly Anxious/Fearful

Note: Children reported their feelings before and after their dental visit. Calm/Content included ratings of 0-2, Mildly Anxious/Fearful included ratings 3-6, and Highly Anxious/Fearful included ratings 7-10 on the Novel Animated Emoji Scale.

CHILD ORAL HEALTH HABITS & ROUTINES



■ Brushing Habits (%) ■ Flossing Habits (%)

Note: 378 children classified as High Risk (only) reported their brushing and flossing patterns. "Other" included responses, such as: "Never," "I don't know," "Sometimes," "A little bit," Multiple times a week, "At Grandpa's house," and "3x/day." Flossing responses included "Never, Once," "A little bit," "Sometimes," "I floss gets stuck," and "After dinner."

RECOMMENDATIONS

Ready, Set, Smile

- Further evaluate the impact of education on child dental experiences: "Do children who receive education prior to dental exam report more positive dental experiences?"
- Increase family education and school outreach. Evaluate impact of these on child oral health habits, routines, and dental experiences.

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A full reference list of all articles used in the scoping review and assessment of organizational priorities that informed the project is available upon request.

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