

Contemporary Modalities in Dental Health: A Systemic Review**Chetan Sharma¹, Dushyant Pal Singh^{2*}, Saransh Chauhan³**¹Associate Professor, Department of Prosthodontics, RRDCH, Udaipur.^{2*}Assistant Professor, Department of Dentistry, Govt. Medical College, Chittorgarh.³PG Resident, Department of Pedodontics, Rajasthan Dental College, Jaipur.

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Corresponding author: Dr. Dushyant Pal Singh

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Abstract

Introduction: Oral health is a critical component of overall health and well-being, yet, oral disease remains a silent epidemic in part due to missed prevention opportunities. Research demonstrates an association between oral and systemic diseases such as, cardiovascular disease, Alzheimer's disease, respiratory infection, and diabetes.

Materials and Methods: MEDLINE/PUBMED and Google Scholar search was conducted for articles published from July 2013 to December 2013 to identify data focusing on two general categories: (i) Dentistry (ii) Health Promotion (e.g., health education, preventive health services).

Result: The intervention methods varied across studies, and included individual instructions on oral hygiene, lectures, audiovisual presentations, and dental supplies. Oral Care Program provided toothbrush, fluoridated toothpaste, dental floss, and scheduled dentists appointments. provided fluoride varnish applications, mouthwash, oral hygiene instructions.

Discussion: This systematic review examined the range, scope and impact of existing oral health promotion interventions during pregnancy. In addition, this review aimed to serve as an initial step toward identifying evidence-based interventions that translate prenatal oral-systemic research and guidelines into practice.

Conclusion: Recent advances in technologies have revolutionized dental diagnostics and treatment planning.

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Introduction

Oral health is a critical component of overall health and well-being (1, 2); yet, oral disease remains a silent epidemic (1) in part due to missed prevention opportunities (3). Research demonstrates an association between oral and systemic diseases such as, cardiovascular disease, Alzheimer's disease, respiratory infection, and diabetes (4–10). Pregnancy represents a unique and sensitive period during the oral health life course (2), and due to changes in hormonal levels, pregnant women are more susceptible to oral diseases such as periodontal disease (11, 12). Periodontal diseases are divided into two main conditions: (i) gingivitis and (ii) periodontitis. Gingivitis is defined as the inflammatory process of the soft tissue surrounding the tooth. If left untreated, gingivitis can lead to periodontitis, which is characterized by inflammation around the tooth that destroys supporting structures (13).

Effective treatment modalities are necessary to promote oral function and psychological well-being. Factors influencing successful rehabilitation include, teeth present, muscular control, nature of

defect and supporting structures, radiation therapy and disease

recurrence.(14) The aim of the present review the advancements made in the field of oral health

Materials and Methods

MEDLINE/PUBMED and Google Scholar search was conducted for articles published from July 2013 to December 2013 to identify data focusing on two general categories: (i) Dentistry (ii) Health Promotion (e.g., health education, preventive health services). Boolean terms were used to look within categories ('OR') and combine the three categories ('AND'). Additionally, the 'NOT' Boolean term was used to omit articles.

Of the included seven studies, data were abstracted including: publication name; year; title; authors; participant characteristics; study design; description of the intervention; outcomes measured; theoretical framework; and study outcome results. Two articles were abstracted by two independent reviewers to assess consistency in abstraction.

Table 1: Indicators and factors that affect risk for dental caries. The greater the number of protective factors, the lower the caries risk.

Indicators and factors that affect risk for dental caries. The greater the number of protective factors, the lower the caries risk.	
Disease Indicators Yes to Any = High Risk Perform Bacteria Test	<ul style="list-style-type: none"> Visible cavities or radiographic penetration into the dentin Interproximal radiographic penetration into the dentin White spots on smooth surfaces Restorations within last 3 years due to caries
Biological Risk Factors Yes to Any = Increased Risk	<ul style="list-style-type: none"> MS or LB both medium or high (requires in-office testing) Inadequate saliva flow (requires in-office testing) Visible heavy plaque Frequent snacks (more than three times per day) Deep pits and fissures Recreational drug use Saliva reducing factors Exposed roots Orthodontic appliances
Protective Factors Yes to Any = Decreased Risk	<ul style="list-style-type: none"> Consumes fluoridated water at home, school, or work Daily use of fluoride toothpaste Daily use of over-the-counter fluoride mouthrinse Daily use of prescription fluoride products Office applied fluoride topical or varnish products within the last 6 months Use of prescribed chlorhexidine rinse within that 6 months Daily use of xylitol gum, lozenges, or other products (four time per day) Calcium/phosphate paste within last 6 months Adequate saliva flow

Table 2: AAPD Caries-Risk Assessment Tool (CAT).

AAPD Caries-Risk Assessment Tool (CAT)*			
Caries-risk Indicators	Low Risk	Moderate Risk	High Risk
Clinical conditions	<ul style="list-style-type: none"> No carious teeth in past 24 mos. No enamel demineralization No visible plaque; no gingivitis 	<ul style="list-style-type: none"> Carious teeth in past 24 mos. 1 area of enamel demineralization Gingivitis 	<ul style="list-style-type: none"> Carious teeth in past 12 mos. More than 1 area enamel demineralization (enamel caries "white-spot lesion") Visible plaque on anterior (front) teeth Radiographic enamel caries High titers of mutans Streptococci Wearing dental or orthodontic appliances Enamel hypoplasia
Environmental characteristics	<ul style="list-style-type: none"> Optimal systemic and topical fluoride exposure Consumption of simple sugars or foods strongly associated with caries initiation primarily at meal times. High caregiver socioeconomic status Regular use of dental care in an established dental home 	<ul style="list-style-type: none"> Suboptimal systemic fluoride exposure with optimal topical exposure Occasional (i.e., 1-2) between-meal exposures to simple sugars or foods strongly associated with caries Midlevel caregiver socioeconomic status (i.e., eligible for school lunch program or SCHIP) Irregular use of dental services 	<ul style="list-style-type: none"> Suboptimal topical fluoride exposure Frequent (i.e., 3 or more) between meal exposures to simple sugars or foods strongly associated with caries. Low-level caregiver socioeconomic status (i.e., eligible for Medicaid) No usual source of dental care Active caries present in the mother Children with special health care needs Conditions impairing saliva composition / flow
General health conditions			
Risk Category <ul style="list-style-type: none"> High Risk: The presence of a single risk indicator in any area of the "high-risk" category is sufficient to classify a child as being at "high risk". Moderate Risk: The presence of at least 1 "moderate risk" indicator and no "high risk" indicators present results in a "moderate risk" classification. Low Risk: The child does not have "moderate risk" or "high risk" indicators. 			

The electronic searches were reviewed and appropriate articles were subjected to inclusion and exclusion criteria. A manual search of the reference lists of selected articles was undertaken and literature that was judged relevant was critically reviewed.

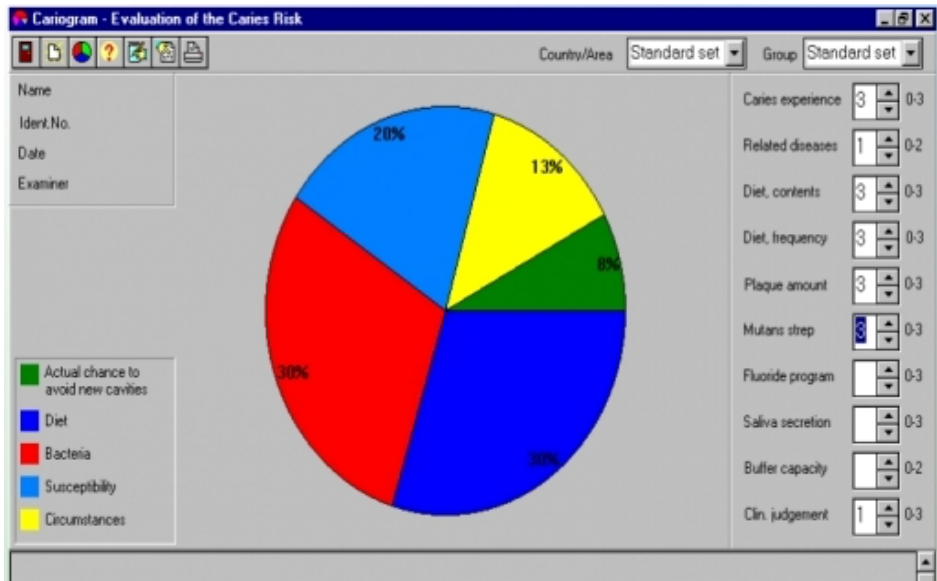


Chart 1: Cariogram – Multi-factorial Risk Assessment Software.

Table 3: Periodontal Risk Flow Chart.



Results

Study setting, demographics, and design.

Intervention

The intervention methods varied across studies, and included individual instructions on oral hygiene, lectures, audiovisual presentations, and dental supplies. Oral Care Program provided toothbrush, fluoridated toothpaste, dental floss, and scheduled dentists appointments (35). Provided fluoride varnish applications, mouthwash, oral hygiene instructions.

The 4 Step Risk Assessment Process

- A. Hazard Identification- What health problems are caused by the pollutant?
- B. Dose-Response Assessment: What are the health problems at different exposures?

- C. Exposure Assessment: How much of the pollutant are people exposed to during a specific time period? How many people are exposed?
- D. Risk Characterization: What is the extra risk of health problems in the exposed population?

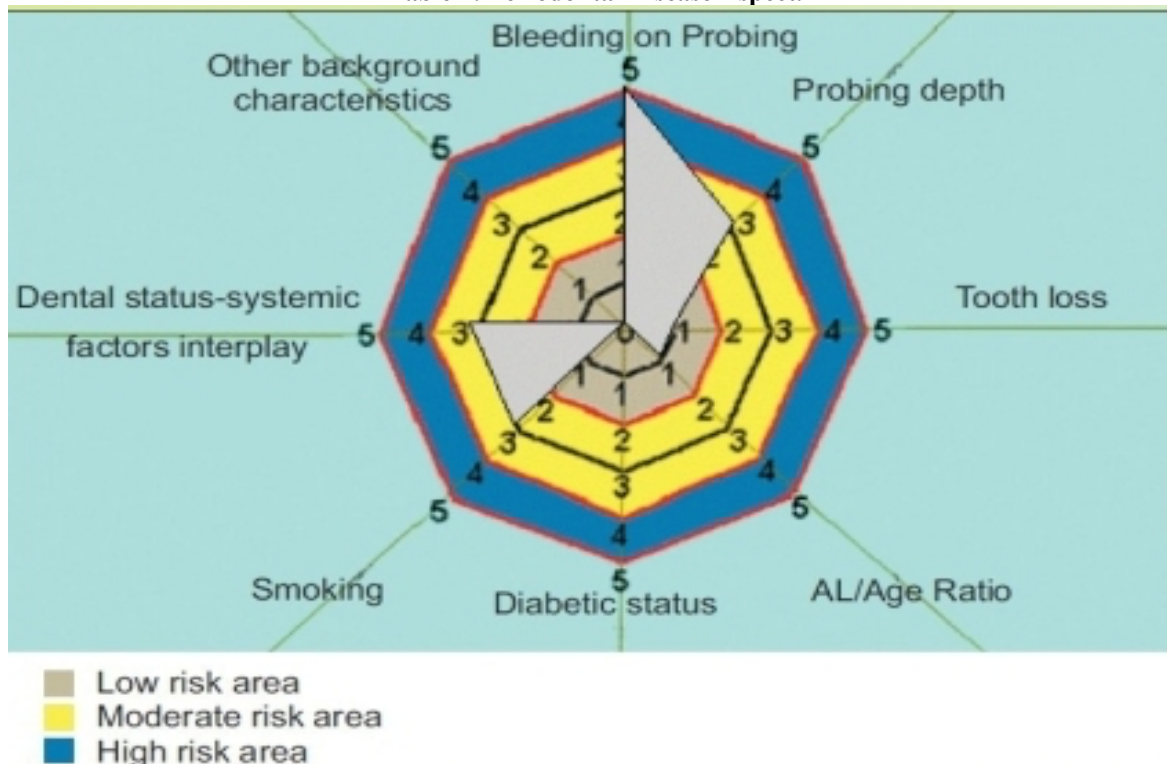
Risk assessment

- A. Microsatellite analysis
- B. Computer imaging system

Management: Oral genomic array Visualization/ molecular paint Molecular individualized under management of following:

- A. Surgical margin decision
- B. Managing patients

Table 4: Periodontal Disease Aspect.



Discussion

This systematic review examined the range, scope and impact of existing oral health promotion interventions during pregnancy. In addition, this review aimed to serve as an initial step toward identifying evidence-based interventions that translate prenatal oral-systemic research and guidelines into practice. Although the evidence underscoring the importance of oral health during pregnancy has been documented and numerous practice guidelines by both medical and dental associations have existed for some time, including the recently consolidated interprofessional practice guidelines, there remains a significant gap in translating this evidence to pregnant women through health promotion efforts. Overall, this review found few oral health promotion interventions during the pregnancy period, and specifically, only seven interventions that have been evaluated on defined health outcomes.

Intervention methods and content also varied across studies and included individual and group prenatal visits, instructions on oral hygiene, lectures, audiovisual presentations, and dental supplies. Time allotted for the interventions ranged from a video (13), 15-min at each of the 10 session program (150 min) (11), to unspecified time requirements. Moreover, only one study (13) focused on topical areas and information specific to the pregnant women’s oral health (e.g., oral health hygiene behaviors to prevent periodontal disease during pregnancy). The majority of the studies

presented content that was focused on children’s oral health, such as: breastfeeding, baby bottle use, first dental visit, nutrition, fluoride use, and other issues related to early childhood caries prevention. Although pregnancy is a critical time for promoting children’s oral health and preventing early childhood caries, there appears to be a bias toward children’s oral health. Most of the interventions neglected pregnant women’s oral health, including oral-systemic health issues and concerns of relevance to women during this period (e.g., swollen and/or bleeding gums; best practices for oral health hygiene if experiencing frequent nausea/vomiting) as well as those of concern and that may impact her own health across the lifecourse. In addition, descriptions were not provided regarding how and why intervention methods and content were developed. With an increasing emphasis on patient-centered interventions and outcomes research, future research should include end users throughout all phases of intervention development, implementation, and evaluation.

In addition, there was a reliance on concrete knowledge and provision of oral health hygiene supplies (e.g., toothbrush; toothpaste). A meaningful use of health literacy to prenatal oral health promotion interventions may serve as an effective mechanism to improving oral health across the lifecourse. For example, drawing on the Institute of Medicine and the Calgary Charter of the Center for Health Literacy, health literacy can be defined as a pregnant woman’s ability to obtain, process, understand, and communicate health

information to make appropriate health decisions. Knowledge, skills, self-efficacy, attitudes, and beliefs also serve as key determinants of oral health literacy. Thus, a more comprehensive health promotion intervention could facilitate pregnant women in obtaining (e.g., finding/accessing oral health information and services), processing (e.g., evaluate the content), understanding (e.g., recognize how the content applies to their own and their children's health), and communicating (e.g., discuss and engage in shared decision-making with providers) on oral health issues to facilitate appropriate health behaviors. A health literacy approach should also extend from individuals (pregnant women) to healthcare professionals (prenatal and oral health providers) and health systems. For example, prenatal and oral health providers should provide information and services in a manner that helps pregnant women understand and engage in positive oral health hygiene and care-seeking behaviors and which facilitates patient-provider communication and shared decision-making. Moreover, systems need to be able to provide access to oral health information and services to all individuals, regardless of ability to pay and facilitate the technological and social infrastructures needed to coordinate care between medical and dental practices. Although, access to oral health services among priority populations and collaboration between disciplines remain significant problems in public health (15), it is beyond the scope of this paper

Conclusion

Recent advances in technologies have revolutionized dental diagnostics and treatment planning. Correct use of appropriate imaging technology and their correct interpretation, following the ALARA (As low as reasonably achievable) principles and cost-effectiveness, newer radiographic techniques can help to detect pathologies in very early stages, which ultimately help to reduce morbidity and mortality and improve the quality of life of the patients.

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