



Integrating Nutrition Counseling into Dental Practice to Enhance Oral Health Outcomes

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Abstract

Integrating nutrition counseling into dental care offers a valuable opportunity to improve oral health outcomes. All dental professionals can contribute to this interprofessional effort. Dietary habits and nutritional status affect the biological processes of caries, periodontal health, and oral soft tissues (Richard, 2013). Given the contemporary rise of dental caries and periodontal diseases, proactive yet preventative measures are necessary (Iriti et al., 2024). The need for nutrition counseling in the dental setting continues to grow.

Nutrition counseling is defined as the process by which nutrition professionals (or dentists) assess patients' nutritional status, identify and prioritize nutrition-related problems, and collaboratively select appropriate intervention strategies. Nutrition counseling is further defined as "the process of providing guidance to clients/groups/patients on nutrition and healthy eating with the objective of promoting good health, preventing disease or resolving chronic health issues". Dietitians, dental hygienists, and dentists play distinct yet complementary roles while providing patient-centered care in their respective fields and can team up to strengthen nutrition counseling in everyday practice.



Keywords: Nutrition, Counselling, Dentistry, Oral Health, Prevention, Diet, Integration, Patient Education

1. Introduction

Dental professionals possess a unique opportunity to assist patients in achieving these complementary objectives of oral and overall health through nutrition counseling. Nutrition influences oral health by moderating plaque accumulation, saliva composition and flow, enamel hardness and solubility, and the pathogenicity of biofilm species. Nutrition also plays a fundamental role in general health, disease prevention, recovery, and many conditions of special importance to patients, including diabetes, iron-deficiency anemia, body image, and drug dependence (Richard, 2013). Both diet and oral health status contribute to one another, presenting opportunities for synergistic strategies that enhance both domains simultaneously. However, nutrition education, defined as the provision of information about diet and health, is generally ineffective in sustaining behavioral changes or improving patient outcomes. In contrast, counseling, which employs various techniques to ensure self-directed behavior modification, has shown the greatest potential to reduce caries risk and conserve resources while promoting diet-associated overall health objectives (Marie King, 2018). Integrating counseling into dental workflows is feasible regardless of clinical model, size, or location, and utilization of the intervention should be proportional to the time allocated. The presence of an interprofessional nutritionist is not a prerequisite for counseling, nor is extensive training needed.

Comprehensive discussion of the specific ways in which nutrition affects oral health is not routinely found in the literature. Nutritional choices can have a direct impact on the condition of oral structures, but the same foods can also adversely affect the soft and hard tissues of other organs. Detailed assessment of the dietary-related connections between oral and overall health provides a critical foundation for the counseling framework itself.

Empirical evidence demonstrates a significant impact of nutrition counseling in dental settings on patient oral health, including on cavity risk, periodontal condition, and associated general health parameters. The intervention is acceptable to dental patients (Iriti et al., 2024), and delivery has expanded in accordance with a trend to adopt a more holistic approach to patient well-being. Nutrition counseling is thus a clear option for enhancing overall health in conjunction with oral health.

2. Theoretical foundations of nutrition and oral health

Oral health and nutrition are closely linked. For example, mature dental plaque (biofilm) is required to initiate caries lesions and calculi formation. Following exposure to sugars, the biofilm displays acidogenicity, which is critical in the caries process. In periodontal disease, dietary factors may influence inflammation and healing (Richard, 2013). Carbohydrate intake



affects caries risk and nutritional status, whilst protein influences growth, remineralization, and a negative nitrogen balance. The majority of risk factors for oral diseases are also prevalent in non-communicable diseases, such as diabetes, cardiovascular disease, and obesity, which has led many dental schools to focus on Soft Drinks, Snacks, and Sweets (Iriti et al., 2024).

Counseling patients on nutrition enables practices to support patients with chronic diseases through dental treatment, in addition to the more traditional approach of managing a patient's treatment needs based on their disease state and the medications and therapies presently used. Drugs used to treat risks such as hypertension (Ca²⁺ channels, Ang-II blockers), chronic obstructive pulmonary disease (Tropical β 2-mimetics), asthma (oral β -agonists), and antimalarial treatments (chloroquine) may have an impact on the oral cavity: changes to saliva, taste, or the lesion themselves. Nutritional assessment may not be the main aim but supports total health management (Merritt, 2018).

3. Current landscape of nutrition counseling in dental care

Nutrition counseling is a complementary practice in dental care. Nutritional habits contribute to the incidence and prevalence of many oral diseases. Dental professionals are in a strategic position for providing nutritional information to their patients. Motivational interviewing techniques can be used for providing this advice in a patient-centered manner (Iriti et al., 2024) ; (Richard, 2013) ;.

Dental caries and periodontal disease remain significant public health issues worldwide. The World Health Organization has recognized that oral diseases affect nearly 3.5 billion people. Since the mid-1960s, caries rates have declined in many industrialized countries, but they are increasing in children in many low- and middle-income countries. Individuals suffering from periodontal diseases represent a major portion of the adult population, with many suffering from moderate to severe forms;;.

Counseling on nutrition should be integrated into routine visits with the aim of enhancing oral health. Favorable changes in dietary practices can improve oral health and reduce the risk of caries and periodontal disease. Dietary risk assessment is a practical approach for addressing nutrition in a dental setting.

4. Core nutritional factors affecting oral health

Nutrition impacts oral health throughout the life span; dietary and beverage choices can influence the development of oral diseases such as caries and periodontal disease. A range of nutritional factors and their relationship to oral health are reviewed below based on findings from the literature. Integrating nutrition counseling into dental care represents an additional approach to enhancing oral health by promoting the broad benefits of nutritional guidance in



tandem with specific dietary recommendations supporting the prevention and management of oral disease.

Core nutritional factors affecting oral health have been identified as macronutrients, micronutrients, dietary sugars, acidic beverages, and water (Kit Ying Chan et al., 2023). Patients frequently lack awareness of these links, and the importance of nutrition for oral health has remained underemphasized in dental practice. Consequently, many patients do not seek dietary counseling from their dental provider; however, this constitutes a missed opportunity to support oral health by applying a nutrition-centered approach to the treatment of oral disease.

4.1. Macronutrients and oral health

Dietary carbohydrates, fats, and proteins have distinct biochemical roles that influence oral health and the development of common diseases such as caries and periodontitis. Nutrition should therefore be considered in preventive strategies to limit the progression of lesions and encourage the use of remineralising agents. Much dental advice on nutrition has focused on dietary sugars, which stimulate acid production in plaque and increase caries risk. Research dating back to the 1970s and more recent systematic reviews support the conclusion that carbohydrates and fats have important roles in cariogenesis. Important metabolic processes also accompany the digestion of food and beverages, with profound and long-lasting effects on oral health, body weight, and systemic diseases. Dietary sugars continue to have, by far, the largest influence on caries. Several food groups have been found to potency to modulate the carious process and work independently or in synergy with fluoride. Nevertheless, a wide variety of food items still exert a much smaller effect.

Dietary protein plays a crucial role in building, replenishing, and maintaining the integrity of oral soft and hard tissues, thereby preventing disease and promoting repair. An adequate protein intake is particularly important during childhood and adolescence, when the oral cavity undergoes critical and rapid development. Saliva contains more than 80 different proteins, many of which have protective properties for maintaining dental tissues. Proteins and non-carbohydrate polymers in foods and beverages also serve as prebiotics, stimulating the growth of beneficial microorganism groups and maintaining a suitable balance in the oral microbiome. Retaining the tooth surface, preserving the papilla between the teeth, and maintaining optimal periodontal health rely on an adequate protein intake throughout life. Furthermore, when minerals and vitamins are in short supply, the body draws on its own protein reserves for crucial metabolic activities, postponing the effects of deficiency for a time. A better nutritional intake helps to support patients undergoing orthodontics.



4.2. Micronutrients and oral health

Calcium, phosphorus, and vitamin D are vital for mineralisation of hard dental tissues. Multiple studies with various designs have linked these micronutrients to oral health (Richard, 2013) in a manner that supports nutrition counselling in dental practice.

Considerable evidence connects dietary fluoride exposure to reduced caries experience, whilst certain aggregated markers of fluoride exposure more strongly associate with decayed, missing, filled teeth (DMFT) than others (Iriti et al., 2024). Systematic review reports that sodium fluoride mouthrinse improves enamel remineralisation for incipient caries, with a dose–response relationship unconfirmed (Kit Ying Chan et al., 2023). Recognition of these associations can guide dietary counselling, particularly for high-caries-risk patients or where dietary fluoride exposure appears low.

Trace minerals such as copper, iron, manganese, selenium, and zinc affect periodontal tissues, oral mucosa, and salivary glands. Epidemiological studies associate these minerals with periodontitis and other oral pathologies. Even moderate vitamin C deficiency correlates with increased gingival inflammation, bleeding, and periodontal attachment loss.

4.3. Dietary sugars, acids, and caries risk

Reduction of added sugars is a primary goal in oral health promotion, and interventions frequently target children and adolescents. However, frequent exposure to simple sugars occurs throughout life. The amount, frequency, and duration of consumption of sugar-containing foods and beverages and the acidogenic potential of substances are key determinants of caries activity (Alberto Feldens et al., 2022).

A systematic review classifying foods by cariogenic potential found that, overall, sugar, sugar-containing foods, and sugar-sweetened beverages had higher cariogenic potential than non-sugar starch and non-sugar foods (Mishra & Mishra, 2011). Table 3 lists the acidogenic potential of leading sugar-containing food groups. Acidogenic and erosive food items should ideally be 10 min before brushing, the goal is to balance a diet so that acidogenic or erosive items remain the exception.

4.4. Hydration and salivary function

Water is the primary component of saliva, constituting approximately 99% of its composition (Iriti et al., 2024). A continuum of hydration exists from thirst sensation to a deficit that leads to dry mouth (xerostomia). Increased water intake enhances saliva flow, reduces the sensation of thirst, and inhibits the ingestion of nonwater beverages and foods that do not promote oral health. The buffering capacity of saliva and its ability to modulate taste perception are important in the evaluation of dietary choices and the maintenance of periodontal health.



Saliva buffers acids produced by food and beverages; enhanced saliva flow through the consumption of more water can aid oral homeostasis and impact oral health (Richard, 2013).

Water is involved in the regulation of the oral cavity. Approximately 99% of saliva consists of water. Sufficient hydration influences saliva flow, buffering, and taste modulation. Enhanced water consumption supports overall hydro-safety and augments oral irrigation. Increasing water intake inhibits the consumption of sugar-containing beverages and foods, which are detrimental to oral health. Salivary function decreases in relation to the oral cavity becoming dry during dehydration. The buffering of acids derived from food and beverages is diminished without an adequate water intake. When dietary acids are ingested, an optimum water intake is required in order to sustain homeostasis.

5. Counseling framework for dental professionals

Nutrition counseling is a vital strategy for preventing disease, supporting behavior change, and enhancing overall health. Integrated into a dental practice, these counseling activities help to remove barriers to patient access and expand the spectrum of services that can be offered. Dental professionals can adopt motivational interviewing techniques—such as open questions, reflective listening, affirmations, and goal-setting—to facilitate and support nutrition behavior change. Common communication strategies tailored to the dental setting include the use of plain language, visual aids, and reinforced messages delivered at multiple points during a visit. In addition to direct nutrition counseling, referral to appropriate medical and dietary providers supports a more comprehensive care plan. Guidelines for these referrals and for documenting them in the patient record help to promote coordinated care (Richard, 2013).

Considerations for oral health education within a broader health promotion agenda can extend the reach and impact of prevention strategies. Participants in dental-sealant studies cited multiple opportunities to incorporate health-development conversations or topics at the preventive-visit level. Building and reinforcing these communications early in a practice's outreach program can enhance buy-in and advocacy momentum (Iriti et al., 2024).

5.1. Goals of nutrition counseling in dentistry

The goals of nutrition counseling in dentistry are threefold: to prevent the onset or progression of oral diseases, to support behavior change in patients seeking to improve their nutrition, and to enhance general health and well-being through appropriate dietary choices (Richard, 2013). Oral diseases such as dental caries and periodontal infection are highly prevalent, are detrimental to suffering individuals, and adversely affect their ability to speak, eat, sleep, learn, and socialize. Nutrition counseling can thus help prevent the emergence of these conditions. In addition, patients increasingly seek assistance in improving their overall health through better nutrition, with goals such as weight loss, increased physical activity, or



improved energy. Providing dietary guidance enables dental practitioners to also support these objectives.

5.2. Motivational interviewing and behavior change techniques

Motivational interviewing provides practical tools to create a change-focused environment centered on patient engagement and autonomy. An empathetic, collaborative, guiding communication style elicits motivation to change from within the patient. This client-centered, directive method enhances intrinsic motivation by exploring and resolving ambivalence while establishing rapport, developing discrepancy, rolling with resistance, eliciting change talk, and supporting self-efficacy. Techniques such as open questions, affirming statements, reflective listening, and summarizing enhance patient engagement and autonomy.

During the counseling discussion, motivational interviewing reinforces the patient's personal choice about changing their nutrition, helping them decide on small, realistic, and measurable steps to achieve their goals (E. Suvan et al., 2022). Setting these specific goals—with agreements on when, where, and how to act—increases the likelihood of commitment to them and remains aligned with the dental clinician's primary objective of improving oral health.

5.3. Communication strategies tailored to dental settings

Nutrition-themed conversations in dental practice benefit from strategies that foster comprehension and retention within the abbreviated time typically available. Patient encounters measured in minutes rather than hours necessitate focused communication that respects the valid concerns of patients who may feel the discussion intrudes on time otherwise spent on discrete written consent for treatment. Visual materials help establish a baseline, define goals, or provide tools. Leverage ongoing analyses of dietary habits and food preferences as well as risk mitigation activities to fortify recalls of previous advice and appreciate progress towards enhancement of health. Reinforcement engages both parents and children in the context of all-ages visits. Sweets consumed during or following meals present risk exposure clearly intelligible to patients of all ages; relative timing supported by oral health surveys and risk stratification refines efforts (Iriti et al., 2024) ; (Richard, 2013).

5.4. Integration with medical and dietary referrals

Each step of patient care ideally contributes to a larger whole, with different professions making necessary contributions to protect patient well-being. This is equally true for dietary determinations, which have both oral and systemic health consequences and, as presented above, strongly affect patient management decisions. Consequently, criteria for coordinating



further dietary assessments and referrals to dietitians and medical professionals can be indicated.

There appears to be minimal overlap between the information useful for dietary assessments in dental and medical scenarios. Thus, ensuring documentation of dietary guidance within dental health records potentially facilitates additional, more complete evaluations by professionals whose responsibilities do extend to nutrition or whose programs directly address oral health and systemic links (Richard, 2013).

6. Practical implementation in dental practice

Implementation of nutrition counseling in dental practice follows a series of manageable steps designed to translate the counseling framework into routine practice. Completion of the first five stages of the counseling framework—including goals, techniques, communication, referrals, and interprofessional collaboration—establishes the rationale and general approach for counseling. The implementation process then converts this foundation into actionable, measurable items applicable without advanced training or extensive time commitments (Iriti et al., 2024).

Integration of nutrition counseling within the dental visit requires strategy and awareness of time limitations. Scheduling, handoffs between assistants, hygienists, and dentists, and direct patient engagement—preferably during examination or prophylaxis—can all facilitate delivery and enhance effectiveness. Nutrition screening can begin at any point in the workflow, advancing full responsibility to the hygienist and promoting patient prioritization of oral health. The emphasis on fluoride treatment and exposure balances pediatric growth, avoids excessive sugary drink consumption, and strengthens the fluoride–sugar relationship.

6.1. Workflow integration and time management

Nutrition counseling has been collected and documented within dental therapy practice management; dental hygienists accessing patient dietary intake deeply influence the likelihood of initiating oral healthful behavioral transitions. As oral and flora cavity disease preventive strategies align with increasing dietary awareness to promote functional and healthful living to better economy and balance diets, outlining meal-and-snack articulations enable mottos that support well-being in all such dimensions. Practitioners determining patient diets in education foster transitions among both cohorts (Marie King, 2018). Scheduling at visit durations of typically less than ten minutes without their logged complete assessment can grant quick recursions to toward habits countering or causing diet-oral health disadvantages, while having limited time during hygiene sessions necessitates patient transfers toward alternative professionals; accordingly, allocation during bimonthly hygiene stints remains supported temporally.



Patients often engage unrestrictedly in sugar- and acid-laden aliment, while fluid intake restricts to beverages deficient in vital minerals, and consider fluoride treatment unnecessary for those already using it in dentifrices, rinses, and tubeware. To elucidate those implausibilities upon one's sequential dietary daily digest or every food through hours spent both receive attention (Richard, 2013). Early discussions convey experimental approaches inviting editorial involvement through other life routines; stepwise-deepening conversations awaken motivations stimulating awakening of patient conditions conducive toward serene nutrient insight awaiting commensurate attention. Setup queries for the discussion form specify syrup and nectar exposure against adjacent-surface presence motivating eventual focus to abrasive and palpability-material frameworks through plant, fruit, grain, and milk structuring alongside sucrose-granule time-lapse activating a sedentary-disease postponement timeframe and fluorescence development reachable under an elementary safeguard stage further determining with locked storage arrangements available, and crumbling fasciculation grasping through meals ongoing past extracted nutrient search meeting cleanliness objectives concluded by crypt retraction alerting cavity remain eligibility alongside pinkish verdure beyond simultaneously achievable yet early cavity susceptibility beneath aqueous tantrums (Iriti et al., 2024).

6.2. Screening tools and risk assessment

Nutrition counseling is increasingly integrated into health care settings to promote healthy dietary behaviors and prevent diet-related diseases. Most dietary prescriptions are based on a comprehensive food or beverage history that estimates the types, amounts, frequency, and timing of dietary intake. Additional information about key dietary risk factors may be obtained via verbal questions and clinical observation. Several practical, time-efficient methods for assessing dietary intake that are suitable for the dental setting have emerged (Iriti et al., 2024).

The U.S. Department of Agriculture (USDA) MyPlate food graphic or the Canadian Food Guide visualize the five major food groups of a healthy eating pattern; these tools can support dietary education. In the dental context, dietary evaluation should assess simple, common risk factors that the dentist can verify: consumption of sugar-sweetened foods, beverages, or acids such as juices and pickling; exposure to fluoride from dietary sources or supplements; and the dental caries risk level according to the ADA caries risk assessment tool, which links frequency and quantity of consumption to clinical action levels. Patients who are candidates for dietary interventions should be identified.

6.3. Documentation and electronic health records

Every patient encounter that involves direct nutrition care should be documented once and linked to an appropriate health concern. One or two standardized statements can describe



general counseling efforts for those who receive only routine nutrition support, while a specific code for intensive work is on record (McCamley et al., 2019). The North American Dietetic Technical Reference, which provides accepted terms for dietetics in electronic health records, can guide the entry of notes in integrated systems (Richard, 2013). Health records and communications must conform to legislative and professional obligations covering privacy, confidentiality, and information management in oral care.

6.4. Patient education materials and resources

Patient education materials are foundational for communicating optimal nutrition and food choices in the dental setting (Richard, 2013) and complement the previously mentioned counseling framework. A systematic review of the role of dietitians in treating patients with eating disorders, which identified clear and specific information on oral health and nutrition as a key educational resource, similarly emphasizes the importance of such materials for effective patient education. Because patients are highly receptive to nutrition promotion in the dental setting (Iriti et al., 2024) , preparation of education resources facilitates implementation of the counseling recommendations described earlier.

Written and visual resources that correspond with the specific counseling objectives noted above help patients recognize and understand their nutritional needs, identify suitable food offerings, and explore how dietary habits shape oral health. Certain practices and dietary items can exacerbate such problems; clear examples eliminate ambiguity and assist with accurate, manageable habit changes. Providing these supports fosters both patient engagement and greater follow-through.

6.5. Interprofessional collaboration and team roles

The expanded role for nutrition counseling in dental practice creates opportunities for interprofessional collaboration with registered dietitians and other health professionals. Numerous frameworks define roles and competencies across interprofessional teams. By aligning with these models, dental teams can target interprofessional partnerships toward improving access, coordination, and integration of nutrition counseling.

A common foundation for interprofessional education and collaborative practice articulates collaborative practice competencies, interprofessional education core competencies, and core principles for integrated team-based care and collaborative practice (Richard, 2013). Competencies specific to nutrition counseling in dental care can complement these frameworks.

The dental competencies of the Interprofessional Education Collaborative (IPEC) encompass teamwork, individual contribution, ethical and legal standards, and communication methods. Communication roles include delivering and receiving verbal and nonverbal messages,



providing accurate and timely information, identifying and responding to communication barriers, and tailoring communication of shared goals to each member's expertise (A. Sanders et al., 2021).

7. Evidence base: impact of nutrition counseling on oral health outcomes

Nutrition counseling and education programs related to dietary intake have been implemented in medical and dental settings and have an impact on patient behavior change, knowledge increase, and preventive health measures (Iriti et al., 2024). Studies evaluated the integration of nutrition counseling into dental hygiene education and the role of nutritionists in dental practice. Integrating dietary counseling in routine dental practice positively influences caries prevention and remineralization, periodontal health, and overall health. Significant caries risk reduction and lesion progression prevention have been reported in high-caries-risk patients, yielding a net clinical benefit (Patterson-Norrie et al., 2020). Measurable behavior change and adherence improve oral and overall health, which dentists can support.

7.1. Caries prevention and remineralization outcomes

Integrating nutrition counseling into dental care has yielded significant outcomes in caries prevention, remineralization, and overall health. Recent research investigating these effects provides evidence of the net clinical benefit offered by dietary interventions. Key studies reveal the potential of preventive counseling and dietary modifications to reduce caries risk and slow the progression of early lesions.

Burt and Pai note that fluoride and dietary considerations are regularly cited as critical factors influencing caries risk. Fluoride availability remains a major consideration in new messages about the possibility of promoting dental caries progression in children during early permanent dentition (K. Cheng et al., 2019). Yet, while the importance of sufficient dietary energy and nutritional balance to support proper growth and development is well recognized and entrenched in school-based programming, public health messages about dietary behavior and oral health for school-age children remain limited.

7.2. Periodontal health and systemic connections

Nutrition counseling in dental practice should also address periodontal health. Halitosis and periodontal disease are often exacerbated by poor nutrition and can lead to serious systemic problems (Martinon et al., 2021). Higher inflammatory biomarkers in individuals show a 30–60% greater risk of developing systemic health problems such as diabetes and cancer. Collaboration with local grocery retailers and dietitians can strengthen these approaches (Iriti et al., 2024).



7.3. Patient adherence and behavior change metrics

Patient adherence to dietary recommendations is a critical factor mediating the effectiveness of nutrition counseling in dental practice. Adherence can be defined as the extent to which the patient's behavior coincides with the clinician's advice (E. Suvan et al., 2022). Understanding adherence is particularly important for a short-duration counseling model, as the likelihood of behavior change diminishes as time passes after an encounter. One way to measure adherence is persistence, defined as the number of days between the last scheduled patient visit and the first follow-up after the nutritional counseling session. The longer the duration of persistence, the greater the hope that positive behavior changes have been implemented.

Patient satisfaction with counseling and education services is a useful marker of adherence. High satisfaction typically correlates with improved adherence. Patient feedback can also yield valuable insights into additional, unrecognized barriers to change that may be addressed in follow-up visits with the dental clinician. For example, a patient may be unhappy with the recommendation to limit soda consumption and therefore decides not to follow any of the proposed guidelines.

8. Special populations and considerations

It is possible to adapt the counseling framework described to meet the needs of several special populations and thereby enhance the practice's risk management strategy. During childhood and adolescence, for example, physiological changes, lifestyle habits, and social influences heighten the risk for caries and other oral diseases. Integrating counseling earlier in life not only extends the practice's coverage of high-risk groups but also aligns with national goals for dietary prevention (Richard, 2013).

Pediatric patients face cavity risk from sugar-sweetened beverages and other sugars because their teeth are still developing. They also require macronutrients, vitamins, and minerals to support their rapid growth. For this age group, dentists can help strike a balance between fluoride supplementation and dietary intake via open-ended questions about fluoride use, parent-reviewed dietary diaries, and educational materials (Iriti et al., 2024). The ongoing dominance of peer-influenced choices at the secondary-school level justifies targeted efforts on sugar-sweetened beverages, especially for middle and high school students living at home. Because local and global social interactions increasingly occur in school settings, school-based strategies provide further opportunities for dentists to extend influence during a period of significant dietary transition.

8.1. Pediatric patients and fluoride synergy

Fluoride plays a crucial role in caries control and prevention. As children grow, the development of new teeth leads to changing fluoride needs and continued vulnerability to



caries (Fleming, 2015). Targeted advice that is sensitive to both nutritional and fluoride needs can help prevent early childhood caries and white spot lesions during this important growth stage (Decker, 2015). During this phase, teeth are developing and mineralizing: saliva may be less available due to compositional changes, and children generally consume more carbohydrates than adults, especially between meals (Cooper et al., 2017).

Healthy dietary habits established during early childhood can persist into later years, with lasting benefits for both general health and oral caries risk. Pediatric patients are therefore an important target for nutrition counseling and interprofessional collaboration. Efforts to prevent early childhood caries are further supported by the high caries prevalence in dialect of childhood and the potential for such caries to significantly disrupt growth.

8.2. Adolescents and sugar-sweetened beverage reduction

Despite the recognized importance of early dietary habits on long-term well-being, strategic interventions to target adolescents have received relatively little attention (Divaris et al., 2017). During these formative years, exposure to sugar-sweetened beverages often increases (Mishra & Mishra, 2011). The school environment and peer groups play significant roles in dietary behavior, while awareness of dental consequences lags behind that of general health (I Hassan & M Othman, 2024). Strategies specifically addressing sugar-sweetened beverage consumption with adolescents enhance the perceived value of oral health and support their overarching and lifelong aims.

8.3. Older adults, xerostomia, and nutritional risk

Older adults, xerostomia, and nutritional risk

Changes in the dentition, including tooth loss or alteration of shape and surface texture, lead to food avoidance as an adaptation to chewing impairment in older adults (Kit Ying Chan et al., 2023). Medications can also disrupt the digestive process. Insufficient consumption of drinking water reduces comfort in chewing and swallowing and diminishes salivary secretion, both of which adversely affect oral health. When dental care and treatment services are unavailable, appropriate public health measures or health education must be provided to ensure good-quality nutrition for older adults who have lost their ability to eat safely or adequately.

8.4. Patients with eating disorders and risk management

Eating disorders are psycho-social conditions affecting many adolescents and adults, often accompanied by serious systemic health issues (S. Silverstein et al., 2019). In such patients, oral health problems—including dental erosion, caries, xerostomia, salivary gland swelling, and periodontal disease—are particularly associated with anorexia and bulimia. Low self-perception and self-esteem contribute to neglect of oral hygiene in these individuals. Yet no



established oral health education programs exist in eating disorder treatment settings, and collaboration between oral health and eating disorder professionals is absent. In the absence of adequate education, the risk of severe oral disease increases, impeding normal eating, speaking, and social interactions. Inclusion of oral health programs that address self-image and provide dental education is essential for a comprehensive, interdisciplinary approach to treatment.

Screening for eating disorders is particularly sensitive; many patients underreport symptoms and signs. Consequently, direct reference to the possibility of eating disorders is often needed. Referral pathways to qualified professionals are also crucial (Iriti et al., 2024).

9. Ethical, cultural, and equity considerations

Respecting diverse perspectives and values is foundational to patient-centered care. Such respect is crucial in counseling, which deals with potentially sensitive topics. Research shows that many patients value this aspect of care and actively seek diet-related guidance from dental professionals (Iriti et al., 2024). Patient input can shape a tailored approach that addresses individual needs and desires, potentially overcoming caution in approaching nutrition.

Nutrition counseling represents a significant expansion of practice scope, prompting questions of clinical equity and privilege. These issues intersect with other socioeconomic factors and should be addressed with transparent discussions on desired and feasible aspects of practice (S. Smith, 2023).

10. Policy implications and professional guidelines

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Nutrition counseling in dentistry should conform to government regulations, scopes of practice, and accreditation standards (Patterson-Norrie et al., 2020), enabling consideration of coverage and reimbursement. National pharmacare policies, for example, recognize nutrition as vital to oral and systemic well-being. However, dental policies are rarely explicit about complementary interprofessional service options, despite accreditation statements promoting patient-centered care and a holistic view of oral health (Iriti et al., 2024).

11. Future directions and research priorities

Nutrition counseling in dentistry is at an important crossroads, making future exploration crucial. Recent studies have demonstrated acceptance of counseling as a viable service, while evidence aligns dietary practices with oral health-related outcomes. Investigating factors that influence counseling integration can strengthen support for further exploration. Operational



studies may aid practitioners keen to integrate counseling into practice but uncertain about scheduling, documentation, and relevant materials. Interest in nutrition and health also remains a dynamic area of inquiry, with various topics warranting additional study, including nutrition during dental oncology treatment, polypharmacy effects, and training methods for sharing nutrition and oral health information effectively (Iriti et al., 2024). Interest in nonfluoride preventive agents has grown in awareness of potential systemic toxicity, further compounding the need for broader nutrition initiatives in the oral health sector (Divaris et al., 2017). Integration of adjunctive sciences into dental curricula has received limited attention despite a greater interest in including nutrition links to caries and periodontitis.

Two overarching themes related to nutrition remain underexplored but could shape the direction of future practice. First, the current environment emphasizes the role of interprofessional health-care delivery, as articulated through team-based care, medical-dental integration, and whole-person health (Patterson-Norrie et al., 2020). Structured collaboration with nutritionists can provide substantial benefits for both practitioners and patients. Awareness of this evolution and its implications for dentistry remains relatively undeveloped, as do relevant educational resources. Integration of a nutrition-counseling framework in practice currently dilutes pedagogical elements favoring informal exchanges. Identification of concurrent curricula that promote or facilitate nutrition discussion would therefore prove beneficial. Exploration of patient-specific attributes, economic influences, or geographic considerations that increase demand for nutrition and dietary input on oral health matters is a second predominant line of inquiry. Availability of reliable, specialized data package tailored to individuals operating at the interface of nutrition and oral health would be a valuable resource for practitioners preparing to undertake this discussion. Overall, continued exploration of nutrition in relation to dental practice remains warranted, regardless of individual practice settings or populations served.

12. Conclusion

Nutrition counseling in dentistry should be framed as evidence-based, patient-centered care integrated into routine practice to improve oral health outcomes. Prevalence of cariogenic and erosive diets, combined with continued fluoride exposure, places an increased burden on prevention-remineralization tactics. Successful integration of nutrition counseling requires prioritization, workflow design, efficiency, and documentation standards. By systematically delivering sound recommendations, expanding the traditional role, and addressing nutrition through a dental lens, greater improvements in oral health can be achieved (Iriti et al., 2024);(Richard, 2013).



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