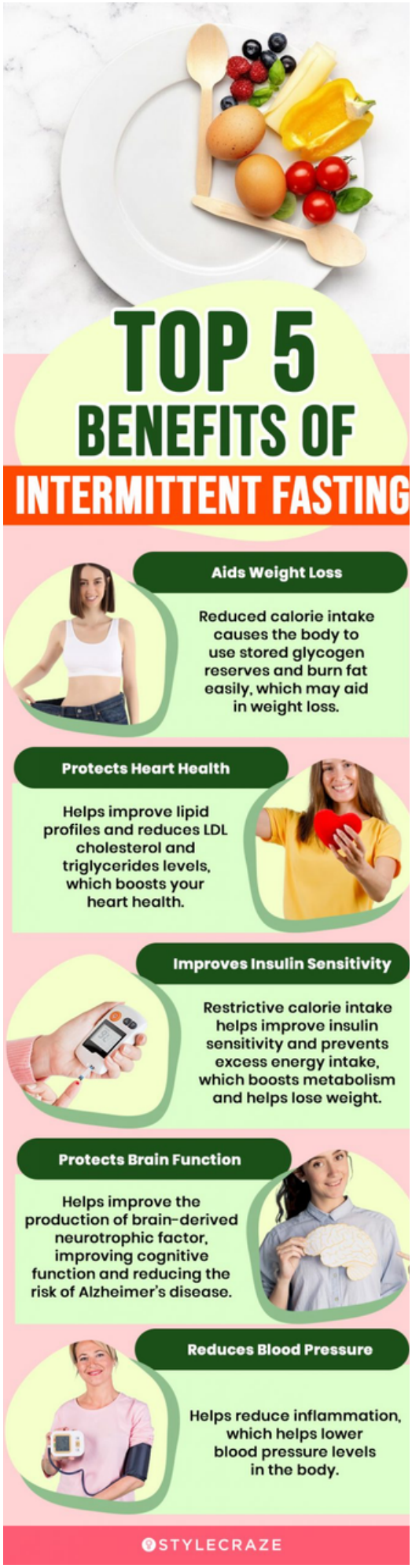
INTERMITTENT FASTING AND ITS EFFECTS ON ORAL AND SYSTEMIC HEALTH



Dental hygienists serve as essential players when it comes to periodontal disease treatment. Intermittent fasting might serve as an optimal non pharmacological method to reduce a patient's risk for periodontal disease.

THE ORAL CAVITY

Intermittent fasting encompasses various eating patterns, emphasizing meals within specific time frames and fasting for the remainder of the day. A popular approach involves consuming two daily meals, typically lunch and dinner, without snacking in between. Additionally, intermittent fasting shows potential for enhancing metabolic health and possibly extending lifespan, although further research is required to grasp its long-term implications.

Intermittent fasting has been discovered to promote autophagy, a process that eradicates damaged cells and facilitates the regeneration of healthy ones. This process may improve the immune system's ability to battle oral infections and preserve a healthy oral environment, potentially declining the risk of oral health problems. Research indicates that intermittent fasting and calorie restriction, particularly when combined with healthy dietary selections, can diminish inflammation throughout the body, including in the oral cavity.

OVER ALL HEALTH

Fasting-induced calorie restriction is deemed a prime method for addressing underlying factors contributing to numerous inflammatory conditions. Our research highlights a study demonstrating that intermittent fasting is associated with a decrease in "mitochondrial oxidative stress free-radical production," resulting in reduced inflammation.

Intermittent fasting also impacts type 2 diabetes and prediabetes. Research has suggested that intermittent fasting can enhance insulin sensitivity, particularly beneficial for individuals with insulin resistance, which is common in patients with type 2 diabetes. Intermittent fasting may help the body utilize insulin more effectively, thus promoting better blood sugar regulation. Some studies have indicated that intermittent fasting can lead to more stable blood glucose levels in individuals with type 2 diabetes. Controlled fasting periods can assist in controlling post-meal spikes in blood sugar, contributing to better overall glycemic control.

While fasting, due to not having a constant source of glucose, a "metabolic switch" occurs when the body is depleted of glucose. After that switch, the body shifts from using glucose to using glycogen.This shift is the cause of a significant improvement in metabolic risk factors like those in diabetic patients. In addition to that, intermittent fasting has been shown to reduce body fat, which improves a patient's leptin levels. Leptin being a hormone that signals the hypothalamus in the brain to suppress appetite and increase energy use. This whole process can lead to lower levels of chronic inflammation.

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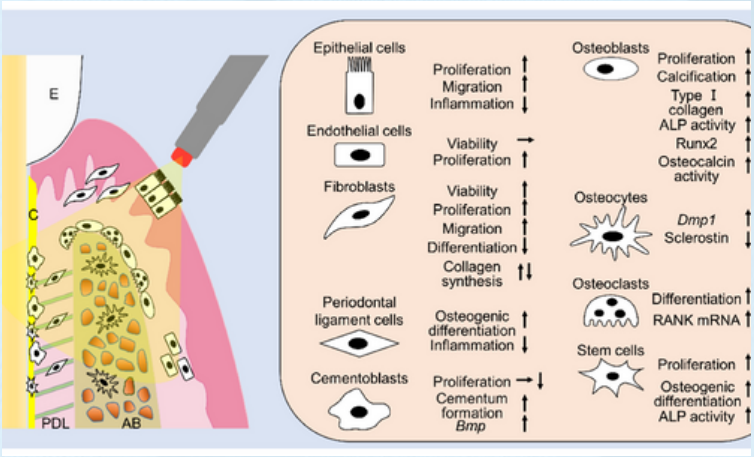
EFFECTS OF DIODE LASER THERAPY ON PERIODONTITIS

Into the laser dentistry

by Jonathan Chi, Myunghye Yoo, Rida Zaeem



DIODE LASERS AN INNOVATION

Lasers attain microbial homeostasis that favors healing and not causes further destruction of tissues. Surgical as well as nonsurgical periodontal therapy aims to reduce this microbial burden as well as arrest the tissue destruction process. Recently, there has been a growing emphasis on using laser technology in managing periodontal diseases, often as a supplementary approach with scaling and root planing. Several studies indicate that diode lasers can notably reduce bleeding index in periodontal disease patients. Several controlled clinical trials focusing on patients having moderate to deep pockets have shown that when used with SRP, diode lasers enhance periodontal treatment by improving pocket depth (PD) and clinical attachment level (CAL) values in cases of active periodontal disease. Therefore, using diode lasers in periodontal pockets during SRP reduces inflammation and bacterial load for patients with periodontitis. The substantial decrease of periodontal pathogens, particularly the red and orange complex bacteria, is a pivotal factor in the effectiveness of NSPT.

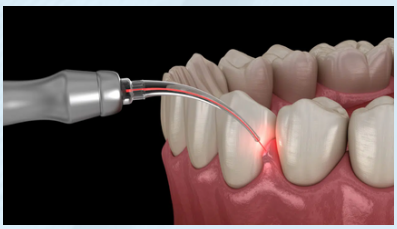
DIODE LASERS IMPACT ON SPECIAL NEEDS PATIENTS

Special needs patients are great at deepithelialization of gingival pockets. Use Diode laser on special needs patients such as pregnant patients, diabetic patients, patients with complex oral anatomy, or simply patients allergic to tetracycline antibiotics are great candidates for laser adjunctive therapy.

Lasers are great at targeting orange and red complex bacteria, reducing inflammation, BOP, and reactive oxygen species that enhance bone levels, eventually reducing Clinical attachment loss.

BENEFITS

Lasers provide clinical benefits that can be seen immediately and long-term benefits such as reducing inflammation, BOP, and reactive oxygen species that enhance bone levels, eventually reducing the CAL principle of action of the Diode laser using photochemical, thermal bio-stimulation to alleviate the process of inflammation. Moreover, since they do not offer side effects like chlorhexidine, minocycline, and doxycycline subgingival products, they can be used in conjunction as well without offering any side effects.



DIODE LASERS IMPACT ON HYGIENE COLUMN

- **LASER COURSE COSTS ABOUT$ 400 TO 600**
- **TWO PROCEDURES**
- **LABR (LASER ASSISTED BACTERIAL REDUCTION**
- **LAPT(LASER ASSISTED PERIODONTAL THERAPY)**

HYGIENISTS CAN USE THE CODE D4999

DIODE LASERS ON PERIODONTAL CELLS

Laser irradiation has many positive effects on various periodontal cells through the interaction with fibroblast, osteoblast, and other mesenchymal stem cells. Numerous studies have reported that laser enhances cell proliferation, migration, viability, and genes or protein expression that favors the outcome of periodontal therapy. Lasers have promising effects on periodontal tissues, and continuous research is ongoing to maximize the use of lasers as part of the therapy.

FUTURE RESEARCH ON PATIENTS WITH SYSTEMIC DISEASE

Bisphosphonate treatment is known to impair bone healing. Studies have shown that laser irradiation could directly affect the fibroblastic cells rather than suppressing the medical effect of bisphosphonate. Also, when talking about osteoblastic cells, studies find a summative effect on osteoblastic and bone formation activity by applying bone graft and laser irradiation rather than applying either modality alone!

Few studies have been designed to measure diabetes-associated biomarkers, such as C-reactive protein, interleukin-6, and HbA1C%. Although the results are not statistically significant, the reduction of pocket depth, CAL, and post-treatment wound healing cannot be ignored. Further studies will be necessary to understand the efficacy of lasers on diabetic patients.

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Limosilactobacillus Reuteri:

Unleashing the Oral Superpower for a Healthy Smile!

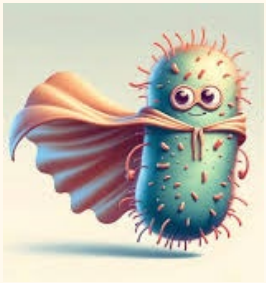
By Kaitlynn Brown, Kendall Norton, & Yenifer Alonso

INTRODUCTION

The Cleveland Clinic states, “Probiotics are live microorganisms (microbes) that can have beneficial effects on or inside your body” As research continues, we have gained a better understanding of probiotics and their benefits within the body. While probiotics are commonly grouped to have a general positive effect on health, there are thousands of independent genus and species, all capable of different effects. Our focus is on Limosilactobacillus Reuteri, formerly known as Lactobacillus Reuteri, and its impact on oral and systemic health as it pertains to patients within the dental office. L. Reuteri was originally isolated via breast milk, saliva, and fecal matter. However, probiotics today are commonly produced in modern production facilities. Common products that you can find L. Reuteri in are fermentable foods, lozenges, or probiotic powders. Keep in mind that lozenges are the easiest and most quantifiable method to accurately determine the amount consumed or recommended to patients. In regards to oral health, L. reuteri has shown to be capable of reducing caries, preventing bone loss in periodontally involved patients, and regulating insulin sensitivity in patients with diabetes as well as an array of other oral and systemic benefits.

Effects on the oral health

- Reduces plaque and harmful bacteria
- Supports the proliferation of good bacteria
- Sustains a healthy balance in the oral cavity
- Fights against cavities and periodontal disease in patients of all ages
- Reduces inflammatory markers associated with periodontitis and systemic illnesses



Role of Dental professionals

Implementation of an oral probiotic may be helpful for periodontitis patients that have been consistent with their dental cleanings but are not showing improvement in clinical parameters, or for healthy patients that like to stay ahead of the game in their oral health. To determine if the addition of an oral probiotic is applicable, a consultation with a DDS should be scheduled.

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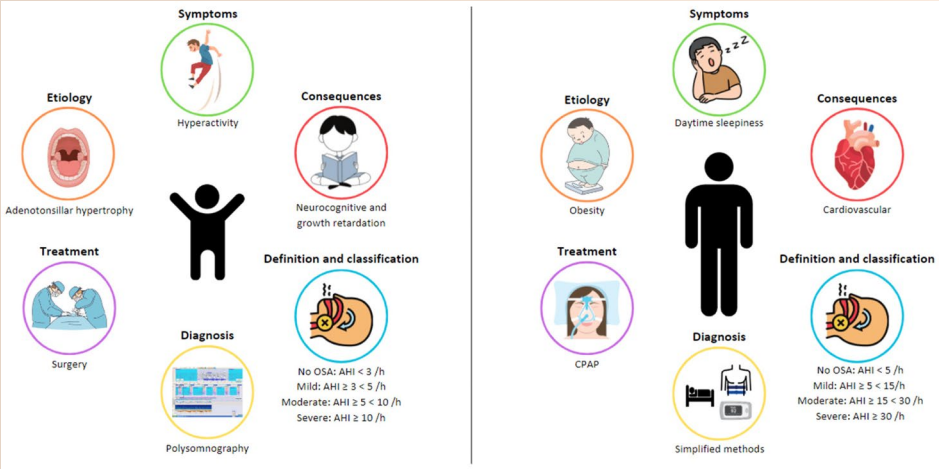
BREATHING IN A NEW PERSPECTIVE: OBSTRUCTIVE SLEEP APNEA AND YOUR HEALTH

By: Rebekah Enriquez, Danielle Sterling, Laura Weihsmann



Obstructive Sleep Apnea (OSA) is an upper respiratory disorder marked by reduced or total cessation of breathing during sleep, referred to as hypopneic or apneic events. The Apnea-Hypopnea Index (AHI) is used to classify the severity of OSA based on the number of events that occur per hour of sleep. Individuals with OSA are unable to experience truly restful sleep. The chronic inflammatory and systemic effects of OSA place individuals at higher risk for stroke, diabetes, cardiovascular disease, heart attack, and more.

Increased adipose tissue in the tongue, neck, and abdominal cavity exacerbates the instability of ventilatory patterns. It thereby contributes to a loss of the vagal and hypoglossal output to the upper airway, increasing collapsibility during sleep.

- Possible treatment options include: *Continuous Positive Airway Pressure (CPAP), Oral Appliances, Surgical Procedures, and Pacemakers. CPAP is considered to be "the gold standard" of treatment.*

Advances in dental sleep medicine can alleviate the gap between dental and medical fields and bring awareness to patients with oral and systemic concerns involving chronic poor sleep. OSA continues to be underdiagnosed. With advancing technology, clinician and patient education, and effective treatment options, patients can expectantly improve their quality of life.

22% of men and 17% of women are reported of having OSA, with rising numbers of OSA patients doubling between ages 50-70 years old.

More studies have shown a prevalence of 49.7% to 23.4% for men, two to four times greater than women who are documented to have obstructive sleep apnea.

OSA has a bidirectional correlation with cardiovascular disease and Type II Diabetes, concerning patients not consistently acquiring the third stage of sleep (N3 stage).

87% of people reported that their restless sleep improved after six months of CPAP therapy.

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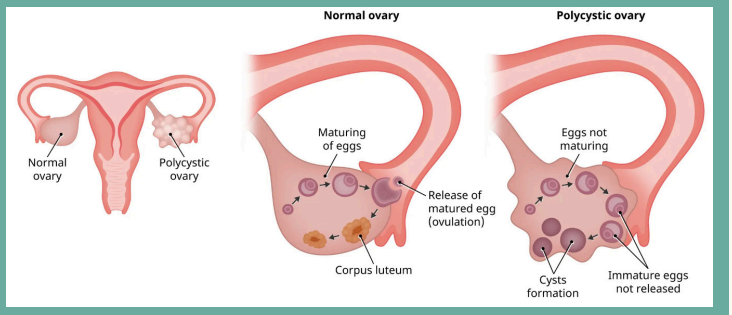
The Role an RDH Plays in Screening for Symptoms of Polycystic Ovary Syndrome to Achieve Systemic and Dental Health

By: Ilvina Nenasheva and Baylee Carlstrom
Collin College Dental Hygiene



Overview

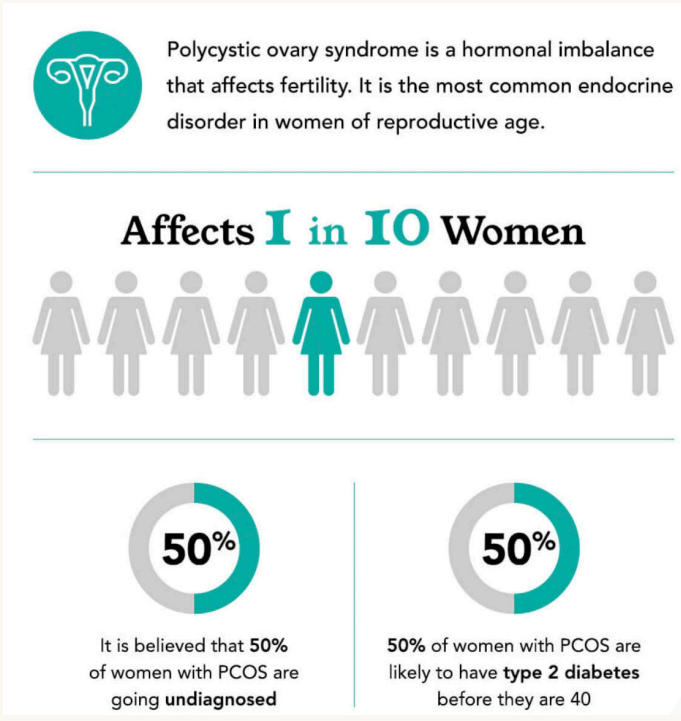
Polycystic ovary syndrome (PCOS) is a hormonal condition that has a negative impact on many aspects of a woman's health. PCOS can lead to diabetes, disturbed menstrual cycle, hyperandrogenism, acne, metabolic dysfunction, obesity, alopecia, hirsutism, osteoporosis, periodontal disease and many more. One of the main factors in the pathogenesis of PCOS is insulin resistance and hyperandrogenism which is elevated levels of male hormones such as testosterone. They have a mutual negative impact on each other which can cause imbalance of other hormones such as follicle stimulating hormone and luteinizing hormone which are responsible for ovulation. Due to the eggs not being released due to absence of ovulation, they start to collect in cysts in ovaries. It is important to note that presence of cysts in the ultrasound is not an essential requirement for the diagnosis despite the name. The insulin resistance associated with PCOS is linked with diabetes and overall chronic low grade inflammation, leading to a destructive systemic effect, including on the periodontium.

Periodontal statistics

In the studies analyzing effects of PCOS on periodontium the bleeding on probing was found to be 3.0 ± 2.6% in the PCOS group compared to a control with 1.4 ± 1.8%. There was also an increase in the plaque index and CAL in the PCOS subjects.

Role of Hygienist

Dental hygienists are key healthcare providers that can contribute to providing awareness and recognition of PCOS symptoms. Having the benefit of seeing patients every 3-6 months, puts dental hygienists at the advantage of being at the front lines to assess PCOS symptoms. As hygienists are already trained through their rigorous education to assess patients for signs of other systemic diseases incorporating knowledge of PCOS symptoms to hygienists would benefit the health of many women. Women presenting with symptoms of PCOS should have their blood sugar measured to assess for insulin resistance. As PCOS is a vastly undiagnosed and misdiagnosed condition, educating other healthcare providers on the signs and symptoms, along with when to make the proper referral to an OBGYN could benefit many women with unanswered questions regarding their condition.



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Polyphenols in Dentistry:

A holistic approach to periodontal wellness

What are polyphenols?

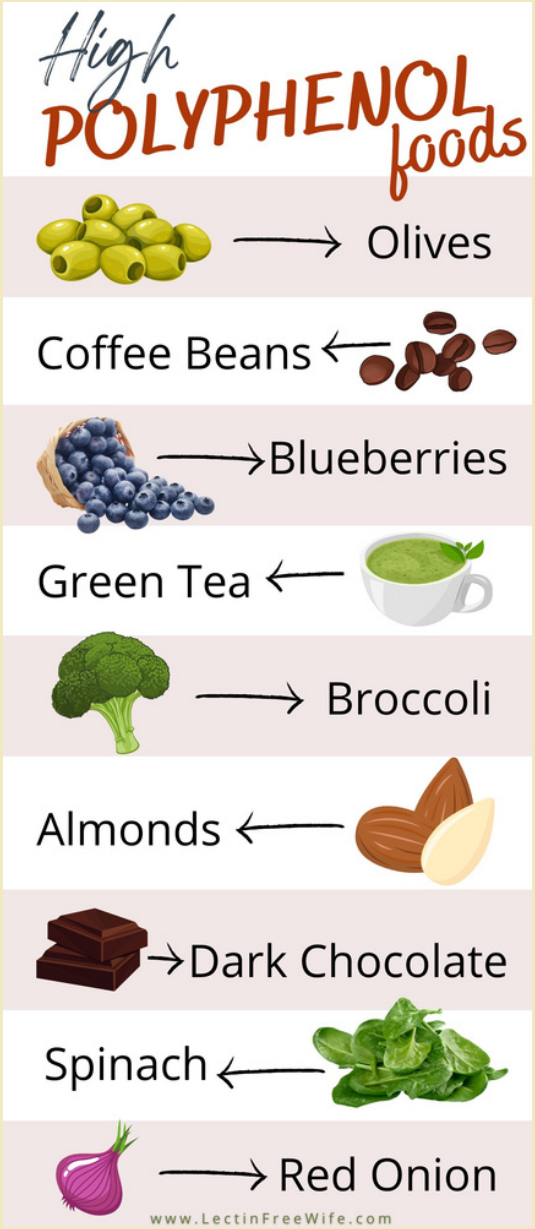
Polyphenols exist organically in nature and contain compounds with antioxidant and adaptogenic properties.

They can be found in many plants that bear fruits and vegetables as well as mushrooms, coffee, cocoa, nuts, and seeds.

By: Anha, Menna and Jade

How do they work?

Polyphenol compounds high in antioxidants and adaptogens contribute to the reduction of free radicals and decrease in oxidative stress to prevent inflammation in the body and oral tissues.



Why are they important?

Research has shown an improvement in gingival inflammation, pocket depths, bleeding on probing, biofilm accumulation and overall gingival health in just one month for periodontally involved patients who consistently consumed polyphenols.

Who would benefit from polyphenols?

Periodontal maintenance patients and even those with moderate to severe gingivitis would benefit from the anti-inflammatory properties of polyphenols.

When should they be introduced as a dental hygiene intervention?

During re-care appointments and while providing oral hygiene instruction clinicians can inform patients on the efficacy of consuming polyphenols as an additional intervention to patient periodontal therapy.

Collin College Dental Hygiene

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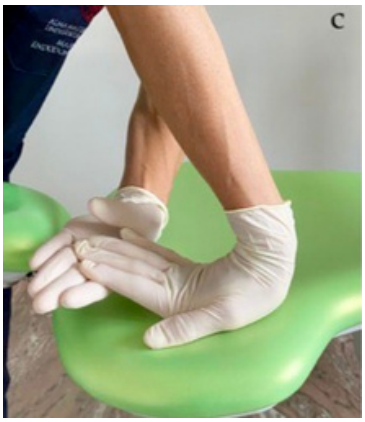
Wrist/ Hands



Neck/ Head

Spine twist

Preventative Medicine for the Preventative Specialist

The demands and stresses of the dental hygiene profession have created an epidemic of burnout syndrome leading to more hygienists leaving the field each year, reducing their number of work hours, or going home after their workday with musculoskeletal and psychological disorders that interfere with quality of life.

The philosophy of yoga helps to strengthen the morals and values that dental hygienists subscribe to, and the physical practice of yoga has been shown to reduce stress and improve overall well-being. The effects of burnout and chronic physical pain are closely connected with decreased immunity, increased pro-inflammatory markers, reduced neuroplasticity functions in the brain, increased stress hormone levels, and high blood pressure, as well as associated with epigenetic changes, affecting the DNA methylation patterns within the body.

For dental hygienists to protect the longevity of their practice, self-awareness of burnout among dental hygiene students and professionals is a crucial component in identifying appropriate preventative measures for burnout.

The techniques that yoga implements target the mind and body's counter-response to stress by easing the body through strategic postures and refining awareness with cognitive concentration.

The dental hygienist can incorporate everyday yoga practices in the dental operatory that involve specific body postures and stretches, known as *asanas*, and breathing techniques, known as *pranayamas*, representing a helpful modality to support a healthier equilibrium.

The dental hygienist can begin by dedicating just 60 seconds a day. Daily yoga practice can be a powerful method to improve physical and psychological well-being, influencing positive physiological changes and preventing burnout.

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Unlocking The Power of Nitric Oxide

Nitric Oxide, Systemic Disease, and Influence of Oral Bacteria

By: Landis Altman, Wynter Villa, and Jana Zayed

Nitric Oxide

Nitric oxide (NO) is beginning to creep into the minds of many. Though its discovery began in 1772, research continues to grow tremendously on its multitude of benefits. NO is a free-floating signaling molecule involved in the regulation of nearly every cell and tissue in the body. Studies reveal that adequate NO positively impacts blood pressure, vascular function, cognitive function, and overall well-being.

Under normal healthy conditions, the body is capable of supplying enough NO on its own through a pathway called Endogenous nitric oxide. Unfortunately, as we age this process begins to slow down and our body begins to have lower levels of NO production. To prevent this from occurring a secondary process focusing on outside sources is used, known as the exogenous pathway.

This pathway involves eating foods rich in nitrate that can further be converted to nitrite by the commensal bacteria resting in the very back of the tongue. They are then swallowed into the stomach for the synthesis of NO.

However, research has revealed that frequent use of specific mouthwash removes the commensal bacteria mandatory for the exogenous pathway to take place. This detrimental effect on NO production ultimately correlates with diseases like hypertension, diabetes, cardiovascular disease, COVID-19, and periodontal inflammation.

Multiple research studies conducted illustrated that Chlorohexidine and antibacterial mouthwashes were most detrimental. Chlorohexidine demonstrated aggressive and potent effects found to deplete over 35 species, including the nitrate-reducing bacteria found on the tongue. This eliminated any nitrate conversion from happening and antibacterial cut nitrite levels in half. Subjects using either of these mouthwashes demonstrated a higher systolic blood pressure after consistent use.

Maintaining Adequate NO Levels

- Consume a diet rich in green leafy vegetables and root vegetables such as beets
- Daily intake of nitrate should be between 3-7mg/kg of body weight
- Maintain good oral hygiene
- Stop or limit the use of Chlorohexidine and antibacterial mouthwash
- Frequent exercise

Role of The Dental Hygienist

- Initiate a conversation about NO levels with patients who are at greater risk for depletion (ex: patients with a history of high blood pressure, type 2 diabetes, COVID, cardiovascular disease)
- Provide alternative oral hygiene aids to mouthwash such as tongue scrapers
- Incorporate nitrate-rich food options into dietary counseling if applicable
- Have NO test strips readily available for in-office patient education

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