

The Association between Vitamin D and Dental Implants. Is it Necessary?

Shubh Karmanjit Singh Bawa^{1*}, Parul Sharma², Pankaj Chauhan³ and Ajitpal Singh Bharaj⁴

¹Department of Dentistry, Bharaj Life Care Hospital and Trauma Centre, Hoshiarpur, Punjab, India

²Department of Dentistry, JP Hospital, Zirakpur, Punjab, India

³Chauhan Dental Clinic, Manali, Himachal Pradesh, India

⁴Department of Orthopedics, Bharaj Life Care Hospital & Trauma Centre.

Received July 09, 2022; Revised August 13, 2022; Accepted August 16, 2022

ABSTRACT

After dental implants are placed and restored, a variety of factors have a big impact on how well they osseointegrate and heal. A few elements, like the dental implant, prosthesis, and grafting materials, are connected to dental biomaterials. Operator expertise and experience-based knowledge might be linked to additional elements. Dental implants' success is greatly influenced by both local and systemic patient-related factors.

Keywords: Vitamin D, Dental implants, Implant failure, Association, Systemic factors

INTRODUCTION

You may already be aware that your oral health might impact your general health and inversely. The connection between vitamin D and dental implants is one instance of this that many people are not familiar with. It's critical to comprehend this connection if you're thinking about getting dental implants so you can take the appropriate actions to ensure the ideal outcome.

We must first comprehend what vitamin D is and how the human body uses it before we can comprehend the connection between the two. Although it can also be found in some foods, vitamin D is a fat-soluble vitamin that is mostly obtained from sun exposure. The body uses vitamin D primarily to facilitate in the absorption of calcium and phosphate. In actuality, vitamin D must be present in the body in order for calcium and phosphate to be absorbed.

In addition, vitamin D serves a number of other purposes, such as:

1. control of cell development
2. inflammation reduction
3. promoting neuromuscular performance
4. enabling bone repair and growth
5. enabling regular bone mineralization

Let's now think about the fundamentals of placing dental implants. Artificial tooth foundations called dental implants are inserted into the jawbone. Osteointegration [1], a

technical word for the process of the implant's bone fusing to the bone, is what happens to them as they recover. But before fusion can take place, the existing bone needs to be structurally sound, and new bone growth is also required.

Dental implants can be an option for you if you recently lost one or more teeth [2]. Teeth gaps can impair your bite, cause adjacent teeth to shift, and even create pain and suffering, which is why many patients choose implant surgery as a long-term fix for their issue. Dental implants can be pricey and are typically not reimbursed by health insurance policies in India because they are labeled as "aesthetic surgery". When there isn't enough bone, it may be necessary to implant bone or even elevate the sinus floor, which raises the expense [3-5].

It is crucial to take all steps possible to improve your chances of success while choosing dental implants [6]. According to research, one approach to achieve this is to make sure your levels of vitamin D are enough. Because of

Corresponding author: Shubh Karmanjit Singh Bawa, Senior Resident, Department of Dentistry, Bharaj Life Care Hospital and Trauma Centre, Hoshiarpur, Punjab, India, Tel: +91 9882051021; E-mail: skbawa911@gmail.com

Citation: Bawa SKS, Sharma P, Chauhan P & Bharaj AS. (2023) The Association between Vitamin D and Dental Implants. Is it Necessary? J Oral Health Dent, 6(1): 472-474.

Copyright: ©2023 Bawa SKS, Sharma P, Chauhan P & Bharaj AS. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

this, calcium and phosphate can be absorbed in sufficient amounts to carry out the aforementioned activities when vitamin D levels are appropriate. This typically leads to quicker healing and optimal therapeutic outcomes. Vitamin D has also been reported to lower the incidence of gum disease and postoperative infection because it lowers inflammation. Maintaining a healthy vitamin D intake has generally been shown to have favorable effects on treatment with dental implants.

On the other hand, vitamin D deficiency (**Figure 1**) may raise the risk of surgical complications and impede healing [3]. Dental implants must merge with the surrounding bone in order to function properly. However, fusion is more difficult to achieve if the body cannot produce enough new, stable bone. This may ultimately result in an implant that fails or becomes loose.

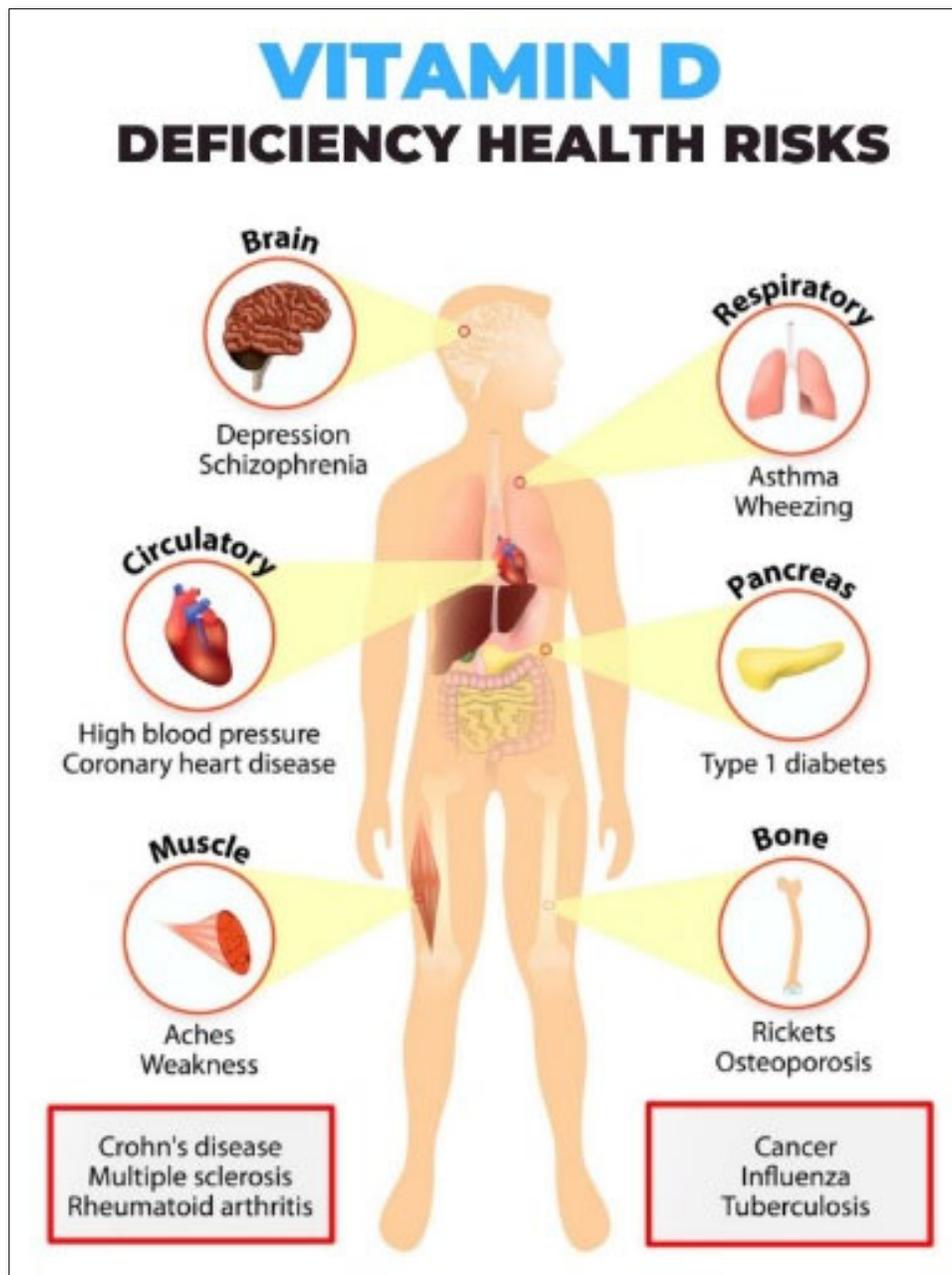


Figure 1. Deficiency Risks.

A paper titled Vitamin D Deficiency in India by Aparna P indicates, regrettably, that a large number of people are

vitamin D deficient. According to the article, the prevalence of vitamin D deficiency ranged from 40% to 99%, with the

majority of research finding a frequency of 80%-90%. A greater risk of vitamin D insufficiency exists in people with darker complexion, those who spend less time outside, those who are overweight, and anyone over the age of 65. If you frequently become sick, experience hair loss, weariness, muscle or bone pain, depression, or wounds that don't heal properly, you may be vitamin D deficient.

HOW TO GET MORE VITAMIN D

Fortunately, a general practice physician's blood test can quickly identify a vitamin D deficit. Taking a vitamin D supplement sold over the counter is another simple way to cure it. Most medical professionals advise taking 600 IU of vitamin D daily or 800 IU if you are over 70. Nevertheless, depending on your health, your doctor can have specific advice. Additionally, they might suggest getting more sun exposure or consuming more dairy and fatty fish.

In general, the connection between vitamin D and dental implants is a significant one that very few individuals are aware of. The several tasks that vitamin D performs coincide with those required for dental implants to be functionally successful. As a result, maintaining appropriate vitamin D levels might enhance the effectiveness of treatment while a shortfall raises the danger of postoperative problems [7-10].

Our most recent clinical investigation looked into the relationship between vitamin D status and early dental implant failure. In our investigation, the serum levels of vitamin D were below 10, between 10 and 30, and over 30 ng/ml in 6, 71, and 23 patients respectively. There was one (1) failure recorded in patients with high serum vitamin D levels (>30 ng/mL) (4.3 percent). The percentage of failed implants was highest in subjects with vitamin D levels under 10 ng/ml (16.67%), then between 10 and 30 ng/ml (7.04 percent) [4].

Contact your dentist if you're thinking about getting a dental implant to learn more about how vitamin D, which can be received from the sun's rays or supplements, might increase the likelihood that it will last. You will also gain a variety of other advantages from doing this, such as preventing heart disease and other diseases. In order to reduce your chance of developing skin cancer or being sunburned, try to spend a few minutes each day outside. However, avoid being outside during prime time.

CONCLUSION

Vitamin D deficiency can result in decreased bone mineral density, osteoporosis, bone fractures, the development of periodontal disorders, and even the failure of dental implants [7]. Due to its antibacterial, anti-inflammatory, and pro-wound healing properties, enough vitamin D intake can reduce the incidence of gingivitis and severe periodontitis [8].

Additionally, vitamin D plays a critical role in bone remodeling, alveolar bone resorption, tooth preservation, and

implant-related bone growth [9]. Patients should have their vitamin D serum levels checked and, if necessary, treated if they have a poor wound healing response following dental therapy, including healing following oral, periodontal, and implant surgery.

REFERENCES

1. Branemark PI, Adell R, Breine U, Lindstrom J, Hallén O, et al. (1977) Osseointegrated implants in the treatment of the edentulous jaw. *Scand J Plast Reconstr Surg* 11(suppl 16): 1-132.
2. Singh SK, Sharma P, Jindal V, Malhotra D, Bansal R, et al. (2020) Evaluation of Public Perception, Awareness and Attitude towards Dental Implant in Punjab Using Web-Based Questionnaire Technique. *J Dental Sci* 5(3): 000260.
3. Aydın EG, Özdemir Ö (2021) Vitamin D and Dentistry. In: Özdemir, Ö, editor. *Vitamin D* [Internet]. London: IntechOpen. Accessed on: August 08, 2022. Available online at: <https://www.intechopen.com/chapters/77094>
4. Bawa SKS, Sharma P, Jindal V, Malhotra R, Malhotra D, et al. (2022) A clinico-relationship between Vitamin D and early implant failure. *IP Int J Periodontol Implantol* 7(1): 15-22.
5. Göçmen G, Özkan Y (2017) Maxillary Sinus Augmentation for Dental Implants. In: Gendeh, B. S., editor. *Paranasal Sinuses* [Internet]. London: IntechOpen. Accessed on: August 29, 2022. Available online at: <https://www.intechopen.com/chapters/55606>
6. Gavia L, Salcido JP, Guda T, Ong JL (2014) Current trends in dental implants. *J Korean Assoc Oral Maxillofac Surg* 40(2): 50-60.
7. Sharma P, Bawa SKS, Jindal V, Malhotra R, Malhotra D, et al. (2020) Should everyone be taking vitamin D?: Narrative review on vitamin D in health and diseases. *Int J Appl Dent Sci* 6(2): 514-519.
8. Sharma P, Bawa SKS, Jindal V, Malhotra R, Malhotra D, et al. (2020) Optimizing the "sunshine vitamin" to boost immune defense against Covid-19. *Int J Sci Res* 9(6): 41-43.
9. Hong HH, Yen TH, Hong A, Chou TA (2015) Association of vitamin D3 with alveolar bone regeneration in dogs. *J Cell Mol Med* 19(6): 1208-1217.
10. Holick MF, Binkley NC, Bischoff-Ferrari HA, Gordon CM, Hanley DA, et al. (2011) Evaluation, Treatment, and Prevention of Vitamin D Deficiency: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab* 96(7): 1911-1930.