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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

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GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრაფიების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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RELATIONSHIP BETWEEN VITAMIN D DEFICIENCY AND CHRONIC PERIODONTITIS

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Abstract.

Background: Vitamin D deficiency may be associated with increased risk of chronic periodontitis.

Aims: To clarify the relationship between vitamin D deficiency and Chronic periodontitis and to evaluate the effect of vitamin D on periodontal index. **Material and Method:** The investigation was carried out on 45 participants of ages within the range of (30-45 years) who were attending the private dental clinics. Diagnosis of chronic periodontitis was established depending on dental history, clinical examinations (periodontal indices). All participants were examined by the same dentist. They were classified into three groups: Group 1 (control negative): (15) participants with normal serum vitamin D3 level and with pocket depth ≤ 3 mm, good oral health and normal periodontal tissues and no previous history of periodontal diseases. Group 2 (control positive): (15) participants with normal serum vitamin D3 level and periodontitis with pocket depth ≥ 5 mm, they received placebo medication orally, Group3(treatment): (15) participants with vitamin D3 deficiency (below 30 IU), and periodontitis with pocket depth ≥ 5 mm, they received oral Vitamin D3 fast acting liquid soft gel capsule 2000 IU /day for 3 months. Serum Vitamin D level was measured before and after the study, 3 blood samples were taken from each participant at 0,45,90 days, for research examinations. The criteria of patients' selection include apparently looked healthy individuals, non-pregnant or lactating females. Vitamin D deficiency group (below 30 IU), there was no history of vitamin D allergy and did not take any medication or supplements or herbals for the last 1month, non-smoking, and non-alcoholic. Deep scaling and root planning were done for every participant in all groups (except control negative) to reach the base line for periodontal index. A written instruction was supplied to each patient about standard oral hygiene home care. After one week, the periodontal indices and radiographical examination was measured for all participants with blood collection and after 45,90 days. Vitamin D level measured before and after research steps.

Result: there was significant reduction in periodontal indices in 45, 90 days of the study which mean good response to the treatment and improvement in pocket depth.

Conclusion: Vitamin D3 supplement can be a good adjuvant in chronic periodontitis.

Key words. Vitamin D deficiency, chronic periodontitis, pocket depth.

Introduction.

Vitamins, such as vitamins A, C, D, E, and K, along with the B vitamins, are essential organic compounds that play a crucial role in maintaining normal metabolism [1]. Among these, vitamin D has garnered significant attention due to its diverse activities

in both skeletal and extra-skeletal systems [1]. Preclinical and observational data have highlighted the importance of the vitamin D endocrine system in various physiological processes. Notably, severe vitamin D deficiency, indicated by a serum 25-hydroxyvitamin D (25OHD) concentration below 30 nmol/l, should be corrected [2]. Additionally, guidelines suggest that optimal bone health in older adults can be achieved with serum 25OHD concentrations above 50 nmol/l. Vitamin D can be obtained from various sources, including the diet, supplements, and exposure to sunlight, which triggers the conversion of the cholesterol precursor 7-dehydrocholesterol into vitamin D. While vitamin D is well-known for its role in calcium homeostasis and bone health, it also plays a significant role in immune regulation and possesses anti-inflammatory effects [3]. Periodontitis, a complex poly-microbial disease, arises from an imbalanced interaction between oral microbes and the individual's inflammatory response. It is one of the most common chronic diseases worldwide and affects the quality of life for those affected [4]. Although periodontitis is typically observed in adults, it can also occur in children and adolescents. The severity and extent of the disease determine the definition of a case, considering factors such as the number of affected teeth, depth of pocket, loss of clinical attachment, and alveolar bone loss [5]. Research has shown a connection between lower vitamin D levels and increased periodontal destruction, as well as more severe stages of periodontitis [6]. Studies have revealed that serum vitamin D3 levels decrease with higher disease severity, distribution, and risk of progression [7]. Conversely, higher serum 25(OH)D levels have been associated with improved bone formation [8]. Vitamin D's critical role in calcium and bone metabolism, immune regulation, and anti-inflammatory effects contribute to these findings [9]. Additionally, supplementation with vitamin D has shown promising results in the nonsurgical treatment of periodontitis [10]. Based on the aforementioned information, the aim of this research is to evaluate the effect of vitamin D3 on the periodontal index of patients with chronic periodontitis and determine the extent of improvement correlated with vitamin D serum levels [11,12]. This study seeks to further understand the potential benefits of vitamin D supplementation in managing periodontal disease and its impact on patients' oral health.

Materials and Methods.

This study was agreed by the scientific committee/department of Dental Basic Science/College, of Dentistry/University of Mosul, and Ethical Committee (UoM.Dent.23/10).

The samples were obtained from forty five patients, their ages ranged between (30-45 years), recruited from the private dental clinics in Mosul city. They were classified into three groups:

Group 1 (control negative): (15) participants with normal serum vitamin D3 level and with ≤ 3 mm, good oral health and normal periodontal tissues and no previous history of periodontal diseases. Group 2 (control positive): (15) participants with normal serum vitamin D3 level and periodontitis with pocket depth ≥ 5 mm, they received placebo medication orally, Group3(treatment): (15) participants with vitamin D3 deficiency (below 30 IU), and periodontitis with pocket depth ≥ 5 mm, they received oral Vitamin D3 fast acting liquid soft gel capsule 2000 IU /day (Poland) for 3 months. The criteria of patients' selection included: They were healthy individuals, non-pregnant or lactating females. Vitamin D deficiency (below 30 IU), there was no history of vitamin D allergy and did not take any medication or supplements or herbals for the last 1 month, non-smoking, and non-alcoholic.

In this study, the researchers aimed to assess the periodontal health of the volunteers by conducting scaling and polishing procedures to establish a baseline for the periodontal index, also referred to as the Ramfjord Index. The periodontal index evaluates six specific teeth in each participant: the upper left central, first premolar, and right first molar, as well as the lower right central, first premolar, and left first molar. To measure the periodontal index, a '0' probe with William's markings at 1, 2, 3, 5, 7, 8, 9, and 10mm was used. Each sextant (one-sixth of the mouth) was categorized based on specific scores. A score of 0 indicated a healthy state, while a score of 1 indicated mild to moderate gingivitis that did not extend around the entire tooth. Scores of 2 represented mild to moderate gingivitis extending all around the tooth, while scores of 3 indicated severe gingivitis characterized by marked redness, bleeding tendency, and ulceration. Scores of 4 indicated a probing depth of less than 3mm, while scores of 5 represented a pocket depth ranging from 3 to 6mm. Lastly, scores of 6 indicated a pocket depth exceeding 6mm. All participants received written instructions regarding standard oral hygiene home care, and after one week, the researchers measured the periodontal indices for each individual to assess any changes in their periodontal health. This study aimed to evaluate the effectiveness of scaling and polishing procedures and the impact of oral hygiene home care on periodontal health.

Serum Vitamin D level is measured before and after the study) ELISA KIT, Germany), 3 blood samples (5cc) were taken from each participants at 0, 45, 90 days, for research examinations.

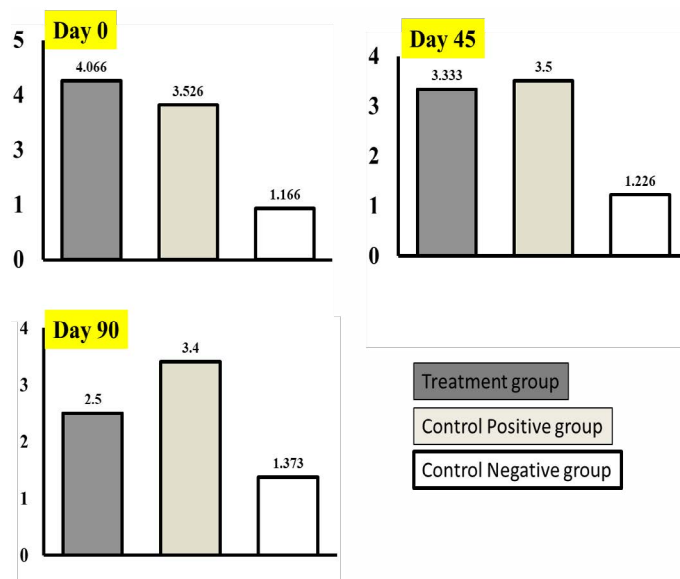
Statistical Analysis was carried out by Microsoft Excel-2010. Duncan test, One-way Analysis of Variance test (ANOVA-test), Dunnett Test, Independent Kruskal-Wallis H test.

Results.

In this study, significant differences were observed between all study groups throughout the study period. The researchers found that there was a notable reduction in the periodontal index during the first, second, and third visits of the study, indicating a positive response to the treatment and an improvement in periodontitis. Interestingly, there was a discrepancy in the measurements of the periodontal disease index among the three groups, which aligned with the required criteria for each group at the first visit. After 45 days of vitamin D3 intake in the treatment group, a significant reduction in the periodontal disease index was noticed, while only a very slight change

was observed in the control (positive and negative) groups. Furthermore, after 90 days of vitamin D3 intake in the treatment group, a highly significant reduction in the periodontal disease index was observed, contrasting with minimal changes in the periodontal disease index in the control positive group and a slight increase in the periodontal disease index in the control negative group. These findings suggest that vitamin D3 intake may have a positive impact on periodontal health, leading to a reduction in periodontal disease index (Figure 1).

Figure 1. Periodontal disease index at baseline (day 0), after 45 days



of therapy, and after 90 days of therapy.

The study conducted on Vitamin D serum levels revealed a highly significant difference between the means of the treatment group and the control (positive, negative) group at both the beginning and the end of the study. This disparity was observed in accordance with the required criteria for each group's Vitamin D serum level at the study's onset. Notably, at the end of the study, there was a substantial increase in the means of the treatment group's Vitamin D serum level, while the control (positive) group showed minimal change and the control (negative) group experienced a slight decline. Moreover, when comparing the effect of Vitamin D3 treatment on the vitamin D serum level throughout the study period, there was a highly significant difference in the means of the vitamin D serum level at the end of the study within the treatment group. Conversely, no significant difference in the vitamin D serum level was observed in the control group (positive, negative) during the study. These findings highlight the potential positive impact of Vitamin D3 treatment on serum levels and emphasize the importance of further exploration in this area of study (Table 1).

Table 1. The serum vitamin D levels are at baseline (day 0), and after 90 days of therapy.

Vitamin D Serum Level	Baseline	at the End of the Study
Treatment group	15.22±1.7	43.912±1.5
Control positive group	23.459±1.2	22.802±1.2
Control negative	37.073±1.7	34.105±1.4

Discussion.

Periodontitis is a chronic infectious disease that affects the periodontal support tissues, leading to inflammation and the progressive destruction of these tissues. This condition is primarily caused by microorganisms present in dental plaque. The development and progression of periodontitis involve a complex interplay between the microbial challenge and the host's immune response. It is widely recognized that connective tissue destruction and alveolar bone resorption are primarily mediated by the host's inflammatory response, which involves the release of pro-inflammatory cytokines and other inflammatory mediators by local tissues and immune cells. These immune reactions are triggered as a response to the presence of bacterial pathogens in the oral cavity. Therefore, both environmental and genetic factors that influence the host's immune response against periodontal pathogens can have a significant impact on the severity and progression of periodontal disease. Understanding these factors and their role in periodontitis can help in developing effective strategies for prevention, diagnosis, and treatment of this chronic oral health condition [13].

The current study observed significant differences between the treatment and control groups, both positive and negative, throughout the duration of the study. These differences were particularly evident in the reductions of the periodontal index at 45 and 90 days, indicating a positive response to the treatment and an overall improvement in the health of the periodontal tissues. This can be attributed to the important role that Vitamin D plays in various physiological processes. Vitamin D is known to be a key factor in the regulation of calcium-phosphate homeostasis, bone mineralization, bone turnover, and immune regulation. Additionally, it possesses profound anti-inflammatory effects. Furthermore, vitamins, including Vitamin D, are essential organic compounds that act as catalysts for metabolic reactions in the body. Vitamin D's protective role against a wide range of chronic diseases is well-documented. It has been found to have a beneficial impact on conditions such as type I diabetes, multiple sclerosis, rheumatoid arthritis, various cancers, heart disease, and infectious diseases. Overall, these findings highlight the significant positive effects of Vitamin D on periodontal health and its potential role in preventing and managing various chronic diseases.

A deficiency in vitamin D can have detrimental effects on the skeletal system. One of the main consequences of a lack of vitamin D is accelerated bone turnover, which refers to the increased rate at which old bone tissue is broken down and new bone tissue is formed. This imbalance in bone remodeling can lead to a reduction in bone density, making the bones weaker and more prone to fractures. In fact, individuals with low levels of vitamin D are at an increased risk of experiencing bone resorption, a process where bone tissue is broken down and absorbed by the body. This can further contribute to a decrease in bone mass and an increased susceptibility to fractures [14,15]. Vitamin D plays a crucial role in maintaining the health of the skeletal system. It is synthesized by human skin cells upon exposure to sunlight and can also be obtained through

dietary sources such as fatty fish, fortified dairy products, and supplements. Aside from its role in bone health, vitamin D has been found to possess various other beneficial effects. It acts as a hormone with immunomodulatory properties, meaning it helps regulate the immune system's response. It also exhibits anti-inflammatory and anti-proliferative effects, which can aid in the prevention and management of certain diseases. The association between vitamin D deficiency and periodontal disease has been extensively studied. Periodontal disease is a chronic inflammatory condition that affects the tissues surrounding the teeth, including the gums, periodontal ligament, and jawbone. Research has shown that a lack of vitamin D can contribute to decreased bone mineral density and osteoporosis, both of which are risk factors for the progression of periodontal diseases. Vitamin D deficiency can also lead to the resorption of the jawbone, further exacerbating the damage caused by periodontal disease. Moreover, vitamin D is essential for bone metabolism and the prevention of tooth loss. It has been found to increase the antibacterial defence of gingival epithelial cells, which are the cells that line the gums. This enhanced immune response can help protect against bacterial infections that can lead to gum disease. Additionally, vitamin D has been shown to reduce gingival inflammation, which is a hallmark of periodontal disease. By reducing inflammation, it can help alleviate symptoms and slow down the progression of the disease. Furthermore, vitamin D has been found to accelerate postoperative wound healing after periodontal surgery. This is particularly important in the field of periodontology, as surgical interventions are often required to treat advanced cases of periodontal disease. By promoting faster and more efficient healing, vitamin D can aid in the recovery process and improve treatment outcomes [16,17].

Human periodontal ligament cells (PDL cells) can act as local immune cells in the periodontal tissues. They produce pro-inflammatory cytokines in response to bacterial lipopolysaccharides and other stimuli like mechanical stress. Stimulation with lipopolysaccharides increases cytokine production through toll-like receptors and NF- κ B signaling. Vitamin D and the antimicrobial peptide LL-37 can counteract lipopolysaccharide-induced cytokine production. Secretory leukocyte protease inhibitor, produced by PDL cells, negatively regulates cytokine production. Understanding the regulation of cytokine production by PDL cells can provide insights into their role in oral innate immunity and their significance in periodontitis. Vitamin D3 supplementation may be beneficial in treating chronic periodontitis [18].

Periodontal disease is caused by anaerobic bacteria, which trigger an immune response involving pro-inflammatory mediators like cytokines, growth factors, and matrix metalloproteinases (MMPs). MMPs are enzymes that degrade various components of the extracellular matrix. They play a significant role in the destructive processes of periodontal disease and can be targeted for treatment. Vitamin D is important for bone metabolism, which is relevant in periodontal surgery for bone regeneration. Adequate vitamin D levels are necessary in these cases [19-24].

Vitamin D3 has a significant impact on periodontal health and periodontitis. It stimulates various cells and immune responses to produce antimicrobial peptides, which combat bacteria and aid in wound healing. Additionally, it suppresses certain immune functions and cytokine secretion, which are involved in the progression of periodontal disease. Vitamin D3 deficiency may negatively affect the progression and treatment outcomes of periodontitis [25-27].

Higher serum 25(OH)D levels have been found to be associated with improved bone formation and a reduced rate of inflammation, as supported by studies [3,9]. It is recommended to take a safe and effective anti-inflammatory dose of 500–2000 IU of vitamin D. Notably, when a higher dose of 2000 IU is used, results are observed earlier. The status of periodontal tissues can be evaluated based on various criteria, including periodontal pocket depth, clinical attachment level, clinical attachment loss, attachment gain, alveolar bone loss, bone defects in the oral cavity, or other selected criteria. It has been observed that individuals with a deficiency of vitamin D experience more severe destruction of periodontal tissues and greater periodontal attachment loss compared to those with high levels of vitamin D [28,29]. Moreover, patients with chronic periodontitis and poor condition of periodontal tissues tend to have lower levels of vitamin D [30].

Conclusion.

Vitamin D3 supplements have been gaining attention in recent years for their potential role in the treatment of chronic periodontitis, a common form of gum disease. Periodontitis is characterized by inflammation and infection of the gums and supporting structures of the teeth, leading to tooth loss if left untreated. Research has shown that vitamin D3, also known as cholecalciferol, plays a crucial role in maintaining oral health by regulating immune responses and promoting proper mineralization of the teeth and bones. Studies have demonstrated that individuals with chronic periodontitis often have lower levels of vitamin D3 in their blood compared to healthy individuals. This deficiency may impair the body's ability to fight off infections and promote healing in the oral cavity. By supplementing with vitamin D3, it is possible to raise the levels of this essential nutrient in the body, which in turn can enhance the immune response and support the healing process in periodontal tissues. Additionally, vitamin D3 has been shown to have anti-inflammatory properties, which may help reduce the inflammation associated with periodontitis and alleviate symptoms such as bleeding gums and gum recession. Furthermore, vitamin D3 may also promote the production of antimicrobial peptides, which can help combat the bacteria that contribute to the development and progression of periodontal disease. While further research is needed to fully understand the potential benefits of vitamin D3 supplementation in the treatment of chronic periodontitis, the existing evidence suggests that it could be a valuable adjunctive therapy in periodontal treatment. Incorporating vitamin D3 supplements into periodontal therapy may provide a beneficial approach to improving oral health outcomes for individuals with chronic periodontitis.

REFERENCES

1. Koprivica M, Bjelanović J. Vitamin D in the diet and its effects on the nervous system. *Medicinski časopis*. 2022;56:158-60.
2. Swadi A, Hilal N, Abdul-Aziz M. The role of melatonin and vitamin d in Iraqi premenopausal women osteoarthritis patients. *Georgian Medical News*. 2023;338:53-6.
3. Mailhot G, White JH. Vitamin D and immunity in infants and children. *Nutrients*. 2020;12:1233.
4. Machado V, Lobo S, Proença L, et al. Vitamin D and periodontitis: A systematic review and meta-analysis. *Nutrients*. 2020;12:2177.
5. Tonetti MS, Jepsen S, Jin L, et al. Impact of the global burden of periodontal diseases on health, nutrition, and wellbeing of mankind: A call for global action. *Journal of clinical periodontology*. 2017;44:456-62.
6. Bhuyan R, Bhuyan SK, Mohanty JN, et al. Periodontitis and its inflammatory changes linked to various systemic diseases: a review of its underlying mechanisms. *Biomedicines*. 2022;10:2659.
7. Sulaiman EA, Dhiaa S, Merkhan MM. Overview of vitamin D role in polycystic ovarian syndrome. *MMSL*. 2022;91:37-43.
8. Olszewska-Czyz I, Firkova E. Vitamin D3 Serum Levels in Periodontitis Patients: A Case–Control Study. *Medicina*. 2022;58:585.
9. Sharma DK, Sawyer RK, Robertson TS, et al. Elevated serum 25-Hydroxyvitamin D levels are associated with improved bone formation and micro-structural measures in elderly hip fracture patients. *Journal of clinical medicine*. 2019;8:1988.
10. Lu EM. The role of vitamin D in periodontal health and disease. *Journal of Periodontal Research*. 2023;58:213-24.
11. Ustianowski Ł, Ustianowska K, Gurazda K, et al. The Role of Vitamin C and Vitamin D in the Pathogenesis and Therapy of Periodontitis—Narrative Review. *International Journal of Molecular Sciences*. 2023;24:6774.
12. Liang F, Zhou Y, Zhang Z, et al. Association of vitamin D in individuals with periodontitis: an updated systematic review and meta-analysis. *BMC Oral Health*. 2023;23:1-4.
13. Dragonas P, El-Sioufi I, Bobetsis YA, et al. Association of vitamin D with periodontal disease: a narrative review. *Oral Health Prev. Dent*. 2020;18:103-14.
14. Grenier D, Morin MP, Fournier-Larente J, et al. Vitamin D inhibits the growth of and virulence factor gene expression by *Porphyromonas gingivalis* and blocks activation of the nuclear factor kappa B transcription factor in monocytes. *Journal of periodontal research*. 2016;51:359-65.
15. Boldyreva Y, Lebedev I, Zaharchuk E, et al. Vitamin D insufficiency as a recent problem for the residents of Tyumen city and Tyumen region. *Georgian Medical News*. 2023;336:13-6.
16. Aydoğan T, HENDEK M, Olgun E. Relationship between periodontal disease and vitamin D. *Journal of Medicine and Palliative Care*. 2022;3:381-5.
17. Wang Q, Zhou X, Jiang J, et al. Relationship between serum 25-hydroxyvitamin D3 levels and severity of chronic periodontitis in type 2 diabetic patients: A cross-sectional study. *Journal of periodontal research*. 2019;54:671-80.
18. Nilsson BO. Mechanisms involved in regulation of periodontal ligament cell production of pro-inflammatory cytokines: Implications in periodontitis. *Journal of periodontal research*. 2021;56:249-55.

19. Checchi V, Maravic T, Bellini P, et al. The role of matrix metalloproteinases in periodontal disease. *International Journal of Environmental Research and Public Health*. 2020;17:4923.
20. Franco C, Patricia HR, Timo S, et al. Matrix metalloproteinases as regulators of periodontal inflammation. *International journal of molecular sciences*. 2017;18:440.
21. Navjot KP, Nisha KJ, Sanjeela G, et al. Role of Matrix metallo-proteinases in Periodontal Disease - A Review. *Biomed J Sci & Tech Res*. 2018;2.
22. Sllamniku Dalipi Z, Dragidella F. Calcium and Vitamin D Supplementation as Non-Surgical Treatment for Periodontal Disease with a Focus on Female Patients: Literature Review. *Dentistry Journal*. 2022;10:120.
23. Könönen E, Klausen B, Verket A, et al. Non-Surgical Periodontal Therapy: Recommendations by the European Federation of Periodontology and Guidelines in Nordic Countries. *Perio insight*. 2022;13.
24. Aboelsaad N. The effectiveness of vitamin D supplementation in chronic periodontitis patients: A randomized controlled clinical trial. *Egyptian Dental Journal*. 2019;65:1311-21.
25. Lips P, Cashman KD, Lamberg-Allardt C, et al. Current vitamin D status in European and Middle East countries and strategies to prevent vitamin D deficiency: a position statement of the European Calcified Tissue Society. *European journal of endocrinology*. 2019;180:P23-54.
26. Jagelavičienė E, Vaitkevičienė I, Šilingaitė D, et al. The relationship between vitamin D and periodontal pathology. *Medicina*. 2018;54:45.
27. Thanoon AY, Al-Mashhadane FA. Anti-inflammatory effect of vitamin D3 on chronic gingivitis. *Al-Rafidain Dental Journal*. 2020;20:73-82.
28. Jagelaviciene E. The Importance of Vitamin D for Periodontal Tissues. *Vitamin D*. Intech Open. 2021.
29. Zhao JG, Zeng XT, Wang J, et al. Association between calcium or vitamin D supplementation and fracture incidence in community-dwelling older adults: a systematic review and meta-analysis. *Jama*. 2017;318:2466-82.
30. Veličković M, Sekulić Marković S, Acović A, et al. Non-invasive treatment of multiple enamel hypoplasia: A case report. *Medicinski časopis*. 2021;55:144-7.