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 Editorial

 The role of vitamin D
in dermatological
diseases

 Cholecalciferol or
calcifediol?
A question of narrative!

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Maurizio Rossini

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2023;6(3):84-85

Dear Colleagues,

In this issue, you will first find an update on the possible role of vitamin D in various dermatological diseases, as its deficiency may contribute to the pathogenesis of some skin diseases, both neoplastic and immune-mediated.

As a rheumatologist, I am particularly interested in psoriasis, the incidence and severity of which has been shown in numerous studies to be associated with vitamin D deficiency and the treatment of which has involved the use of topical vitamin D analogues for years.

The association of psoriasis with arthritic manifestations is frequent and well known. Indeed, psoriatic arthritis is classified amongst the Spondyloarthritis (SpA), representing a heterogeneous group of chronic inflammatory rheumatological diseases that share genetic, radiological and clinical characteristics, including the possible involvement of the entheses, axial skeleton and sacroiliac joints as well as peripheral joints. Copious evidence shows that specific inflammatory cytokines are involved in the pathogenesis of SpA (IL17, IL23, TNF- α , IL6). In particular, IL17 plays a pathogenetic role both in joint exertion and in entheses and bone. Recent evidence also indicates that metabolic as well as immunological factors are additionally involved in the pathogenesis of SpA, including in particular those modulating bone metabolism, such as DKK1, sclerostin and PTH, as has been shown ¹⁻⁵. On such pathogenic, immunological and metabolic components, there is a scientific rationale for believing that vitamin D – often described as deficient in patients with SpA ⁶⁻¹⁰ – may play an important role. Yet, in addition to playing an important role in the regulation of phosphate-calcium metabolism, including PTH control, vitamin D is also recognised for its immunomodulatory and anti-inflammatory actions ¹¹. In fact, vitamin D can act by endocrine mechanism (the typical regulatory action of bone metabolism) but also autocrine-paracrine signalling, thanks to the presence within individual cells of the enzyme 1- α -hydroxylase capable of producing the active metabolite 1,25(OH)₂ vitamin D. Both the vitamin D receptor and 1- α -hydroxylase are expressed by different types of immune cells including macrophages, T-cells, dendritic cells, monocytes and B-cells. Preclinical studies indicate that vitamin D exerts biological effects on both the innate and adaptive immune systems, including on the production of proinflammatory cytokines.

It is known that vitamin D deficiency is associated with increased serum levels of pro-inflammatory mediators, including IL-6 and TNF- α , which are related to both the development and progression of inflammatory rheumatological diseases like SpA. What's more, we have recently observed that in healthy yet vitamin D-deficient subjects, supplementation with vitamin D results in a significant reduction in IL-6 and IL-17 levels ¹².

The second article in this issue is dedicated to the ongoing debate on the choice between cholecalciferol and calcifediol. The authors conclude that on the basis of knowledge of physiology and current scientific evidence, cholecalciferol should be considered the therapy of first choice in the prevention and treatment of vitamin D deficiency, and that the use of calcifediol should be limited to special situations, such as malabsorption syndromes, severe obesity or liver failure.

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% difference compared to 31 months 17 th APRIL-19 th OCTOBER (PRE NOTE 96)		31 MONTHS 19 th NOVEMBER-22 nd MAY (POST NOTE 96)		
IN THE NOTE	ATC 5	Number of packs	Gross expenses	
Alfacalcidol	NO	A11CC03	45,9%	54,5%
Calcitriol	NO	A11CC04	-4,8%	-3,9%
Cholecalciferol	YES	A11CC05	-21,3%	-16,4%
Calcifediol	YES	A11CC06	41,1%	49%
Cholecalciferol + calcium	YES	A12AX	-27,1%	-28,9%
TOTAL ATC IN THE NOTE		-19,6%	-15,7%	
TOTAL ATC NOT IN THE NOTE		8,5%	18,2%	

IN THE NOTE

Average gross monthly ATC POST 21,341,970

Average gross monthly ATC ANTE 25,331,506

AVERAGE MONTHLY SAVINGS 3,989,536

IN THE NOTE

Average gross monthly ATC POST 2,027,640

Average gross monthly ATC ANTE 1,714,870

AVERAGE MONTHLY INCREASE 312,770

Average monthly savings observed over the last 19 months in the ATC in the note: 2,807,326

FIGURE 1.

NOTE 96 – Monitoring consumption trends of the note relative to vitamin D. Office for Pharmaceutical Expenditure Monitoring and Relations with the Regions. Italian Medicines Agency (AIFA). Last analysed: May 2022. Analysis on 31 months after the introduction of the note (https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_31mesi_08.11.2022.pdf).

Also in the “Particular Warnings” of Note 96 of the Italian Medicines Agency (AIFA) ¹³, it is pointed out that the main evidence of antifracturative efficacy has been conducted using cholecalciferol, which appears to be the molecule of reference for this recommendation, and that the clinical documentation in this area of use for hydroxy analogues is very limited. It should thus be a matter of concern that AIFA's monitoring of vitamin D consumption following Note 96 ¹⁴, in view of expenditure savings due to the reduction in the use of cholecalciferol, shows an upswing in the consumption of calcifediol and alfacalcidol, being negligible from an economic point of view but not from a point of view of appropriateness (Fig. 1).

What do you think? Happy reading!

References

- Orsolini G, Adami G, Rossini M, et al. Parathyroid hormone is a determinant of serum Dickkopf-1 levels in ankylosing spondylitis. *Clin Rheumatol* 2018;37:3093-3098. <https://doi.org/10.1007/s10067-018-4205-0>
- Rossini M, Viapiana O, Idolazzi L, et al. Higher level of Dickkopf-1 is associated with low bone mineral density and higher prevalence of vertebral fractures in patients with ankylosing spondylitis. *Calcif Tissue Int* 2016;98:438-445. <https://doi.org/10.1007/s00223-015-0093-3>
- Fassio A, Idolazzi L, Viapiana O, et al. In psoriatic arthritis Dkk-1 and PTH are lower than in rheumatoid arthritis and healthy controls. *Clin Rheumatol* 2017;36:2377-2381. <https://doi.org/10.1007/s10067-017-3734>
- Fassio A, Gatti D, Rossini M, et al. Secukinumab produces a quick increase in WNT signalling antagonists in patients with psoriatic arthritis. *Clin Exp Rheumatol* 2019;37:133-136.
- Fassio A, Atzeni F, Rossini M, et al. Osteoimmunology of spondyloarthritis. *Int J Mol Sci* 2023, in press.
- Rotondo C, Cantatore FP, Cici D, et al. Vitamin D status and psoriatic arthritis: association with the risk for sacroiliitis and influence on the retention rate of methotrexate monotherapy and first biological drug survival-A retrospective study. *Int J Mol Sci* 2023;10;24:5368. <https://doi.org/10.3390/ijms24065368>
- Touma Z, Eder L, Zisman D, et al. Seasonal variation in vitamin D levels in psoriatic arthritis patients from different latitudes and its association with clinical outcomes. *Arthritis Care Res (Hoboken)* 2011;63:1440-7. <https://doi.org/10.1002/acr.20530>
- Kincaid G, Bhattoa PH, Herédi E, et al. Vitamin D3 levels and bone mineral density in patients with psoriasis and/or psoriatic arthritis. *J Dermatol* 2015;42:679-684. <https://doi.org/10.1111/1346-8138.12876>
- Gamonal SBL, Gamonal ACC, Marques NCV, et al. Is vitamin D status relevant to psoriasis and psoriatic arthritis? A retrospective cross-sectional study. *Sao Paulo Med J* 2022;141:e2022216. <https://doi.org/10.1590/1516-3180.2022.0216.R1.01072022>
- Diao M, Peng J, Wang D, et al. Peripheral vitamin D levels in ankylosing spondylitis: a systematic review and meta-analysis. *Front Med (Lausanne)* 2022;9:972586. <https://doi.org/10.3389/fmed.2022.972586>
- Giannini S, Giusti A, Minisola S, et al. The immunologic profile of Vitamin D and its role in different immune-mediated diseases: an expert opinion. *Nutrients* 2022;14:473. <https://doi.org/10.3390/nu14030473>
- Fassio A, Gatti D, Rossini M, et al. Effects on serum inflammatory cytokines of cholecalciferol supplementation in healthy subjects with vitamin D deficiency. *Nutrients* 2022;14:4823. <https://doi.org/10.3390/nu14224823>
- Nota AIFA 96. <https://www.gazzettaufficiale.it/eli/id/2023/02/20/23A00990/SG>
- Monitoraggio Nota 96. https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_31mesi_08.11.2022.pdf

The role of vitamin D in dermatological diseases

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INTRODUCTION

Vitamin D is also of great interest in dermatology. Indeed, there is a dual relationship between it and the skin. On the one hand, it is synthesised by keratinocytes in response to sun exposure and, on the other, it works actively on the skin itself. This two-way process has been named the photoendocrine system of vitamin D¹.

From a biochemical perspective, the skin synthesises the prohormone vitamin D₃ (cholecalciferol) through the interaction between 7-dehydrocholesterol and ultraviolet light. This process can meet up to 80% of our daily needs.

Many factors influence the skin's ability to synthesise vitamin D. Amongst the most important are latitude, seasonality, phototype and means of sun exposure². A minority percentage of the requirement, 20%, is taken up through the food supply in the form of vitamin D₂ (ergocalciferol), found in fruit and vegetables, and vitamin D₃, contained in high amounts especially in salmon and herring. The biologically-inactive vitamin D₃ is converted in the liver into 25-hydroxy-vitamin D₃ (calcifediol), the form most commonly found in the systemic circulation. Calcifediol is again hydrosilylated in the kidney into 1,25-dihydroxy-vitamin D₃ (calcitriol) which, by interacting with specific nuclear receptors called *Vitamin D Receptors* (VDRs), is the main driver of the biological effects of this molecule (Fig. 1)³.

Vitamin D plays a fundamental role for bone tissue, regulating phospho-calcium homeostasis whilst a deficiency causes osteomalacia, osteoporosis and increased susceptibility to bone fractures.

However, the effects of this vitamin are not limited to the skeleton. There is growing evidence of its ubiquitous antiproliferative and immunomodulatory properties. Vitamin D deficiency has been documented in various cardiovascular, oncological, neurological, autoimmune and infectious diseases^{2,4}.

Of particular interest are the multiple functions that vitamin D performs in the body. By acting

on the keratinocytes through an autocrine and paracrine mechanism, it controls their differentiation and proliferation whilst stimulating their production of ceramides, which are essential lipids for maintaining skin hydration¹. Vitamin D also plays an important role in the defence against skin infections by inducing the production of antimicrobial peptides, such as cathelicidin LL-37 and beta-defensin⁵. Vitamin D exerts a relevant immunomodulatory function by inhibiting antigen presentation by Langerhans cells and the proliferation of both B- and T-lymphocytes, inducing an overall shift from a Th1 response to a Th2. This inhibits the production of proinflammatory cytokines such as IL-1, -6, -8, -12, TNF-alpha and interferon-gamma, whilst inducing the production of anti-inflammatory cytokines, such as IL-10, and the differentiation of regulatory T-cells¹.

The main dermatological diseases associated with vitamin D deficiency include both skin neoplasms and some of the most frequent immune-mediated diseases, like atopic dermatitis, psoriasis and vitiligo.

CUTANEOUS NEOPLASMS

Vitamin D is involved in cell differentiation, maturation and cellular senescence and has an inhibitory effect on neoangiogenesis and oncogenesis⁶. However, the association between vitamin D deficiency and skin neoplasms is controversial since data from the studies is conflicting³. Sun exposure is both a major risk factor for this type of neoplasm and the main source of cholecalciferol. For the same reason, photoprotection recommended by dermatological guidelines with the aim of preventing photoageing and photocarcinogenesis could theoretically lead to lower vitamin D production in the skin¹. Current evidence seems to suggest that this phenomenon is unlikely with common sun filters. No good studies are available that have defined the relationship between sun exposure, photoprotection, vitamin D levels and neoplasia risk². Vitamin D may be involved in the development of *Non-Melanoma Skin Cancer* (NMSC), tu-

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Conflict of interest

The author states that there are no conflicts of interest.

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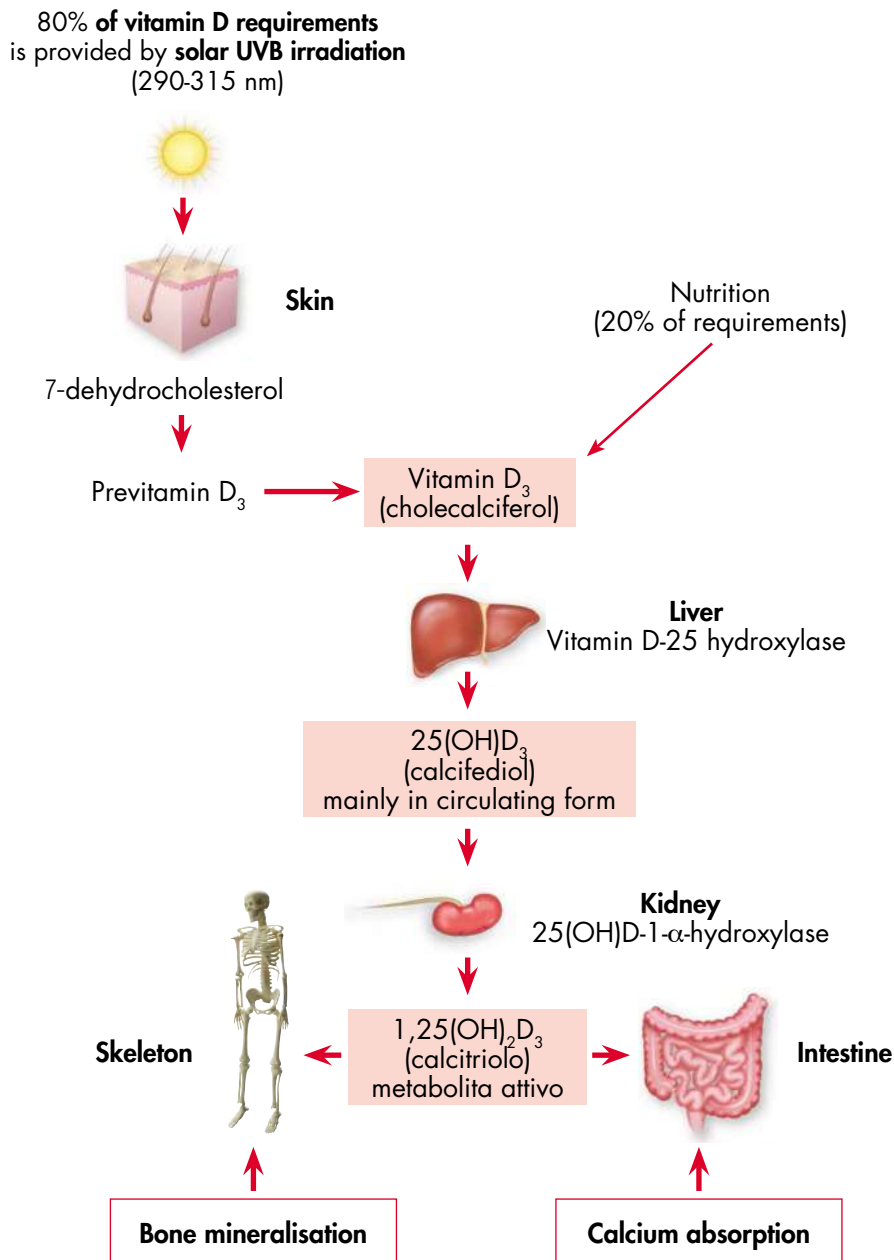


FIGURE 1.
Vitamin D synthesis and metabolism ³.

mours that have keratinocyte as their cell of origin and manifest as erythematous, sometimes ulcerated nodules, usually in photo-exposed areas (face, scalp, back). More specifically, it has been observed that vitamin D has the property of inhibiting the Hedgehog signalling pathway, which plays a key role in the development of basal cell carcinomas (BCC) ². Clinical data in the literature is all conflicting, sometimes positively and sometimes negatively associating serum vitamin D levels and incidence of Non-Melanoma Skin

Cancer (NMSC), both Basal Cell Carcinoma (BCC) and squamous cell carcinomas (SCCs). A positive association was even observed between NMSC and high serum levels of vitamin D, yet not between NMSC and oral supplementation ⁷. Cutaneous melanoma (Fig. 2) is a tumour that results from the neo-plastic transformation of melanocytes that, together with keratinocytes, are part of the epidermis and are responsible for producing melanin, a pigment that protects against the damaging ef-

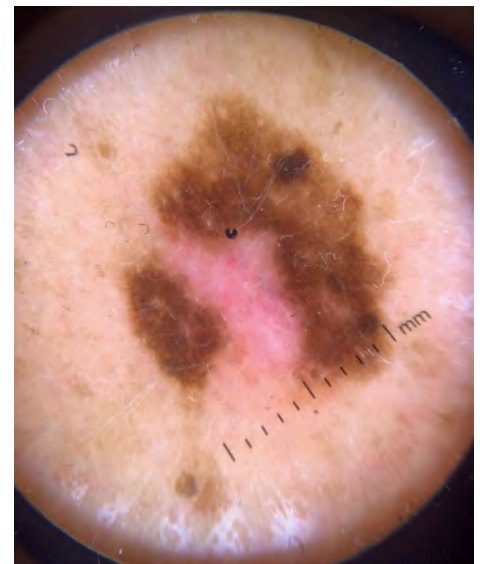


FIGURE 2.
Malignant melanoma of the skin. Epiluminescence image (10X optical magnification).

fects of the sun's ultraviolet rays. With regard to melanoma, ongoing studies have shown that vitamin D and its metabolites are able to inhibit the proliferation of melanoma cells in both animal and human models ⁶. This effect appears dependent in part on the expression of VDR within neoplastic cells and the presence of specific single nucleotide polymorphisms at coding gene level ⁶. Although sometimes conflicting, the results seem to suggest a clinical association between low serum levels of vitamin D and the onset, progression and outcome of melanoma ^{8,9}. In particular, hypovitaminosis appears to play a significant role in melanomas arising in non-photo-exposed sites, which often have a worse prognosis. This result could be due not only to a diagnostic delay but also to a vitamin D-mediated protective effect on the photo-exposed areas ¹⁰.

Conclusive data on possible preventive effects of skin neoplasias by oral vitamin D supplementation is not yet available ^{1,2}.

ATOPIC DERMATITIS

Atopic Dermatitis (AD) is the most common inflammatory skin disease. It is characterised by a multifactorial aetiology including factors of genetic predisposition, altered skin barrier function, along with a filaggrin defect and Th2 immune response. Vitamin D possesses not only an immunomodulatory capacity but also the ability to stimulate filaggrin production. AD has been associated with hypovita-

minosis D in both adults and children ⁵. This is consistent with the epidemiological finding that both of these conditions have a higher incidence with increasing latitude and consequently with reduced sun exposure. It has also been observed that children with AD show clinical improvement after migration to lower latitudes ¹¹. Poor exposure to sunlight during the winter months may partly explain disease exacerbations that commonly occur in the cold months, whereas AD generally tends to improve in summer. Moreover, AD presents an increased risk of *Staphylococcus aureus* infections related to lower skin levels of LL-37 peptide, the synthesis of which is induced by vitamin D ². In AD, oral supplementation showed an improvement in disease severity indices and also a decrease in cutaneous colonisation by *Staphylococcus aureus* ⁵.

PSORIASIS

Psoriasis is a chronic inflammatory skin disease whose distinctive anatomopathological features are excessive keratinocyte proliferation, abnormal keratinocyte differentiation and the presence of a major inflammatory infiltrate (Fig. 3). These are all processes in which vitamin D plays a biologically-important role ¹². Numerous studies have identified an association between low serum calcifediol levels and psoriasis with a statistically significant inverse correlation between the magnitude of the deficiency and the severity of the psoriasis ^{12,13}. Other studies have found a downturn in the risk of developing psoriasis with increasing serum levels of vitamin D ¹⁴. Its therapeutic effect on this disease has been known for decades, with topical vitamin D analogues such as calcipotriol and calcitriol commonly used in the local treatment of psoriasis, often in combination with a corticosteroid. These drugs have the property of not only inhibiting proliferation and increasing the differentiation of keratinocytes but also modulate the immune response, acting directly on the etiopathogenesis of plaque psoriasis on several levels ¹. The evidence that oral vitamin D supplementation may be of benefit to a psoriatic patient is still debated ¹².

VITILIGO

Vitiligo is an acquired disease of an autoimmune nature that targets epidermal melanocytes. It manifests as achromic maculae, without melanic pigment (Fig. 4). Vitamin D₃ increases tyrosinase activity and melanogen-

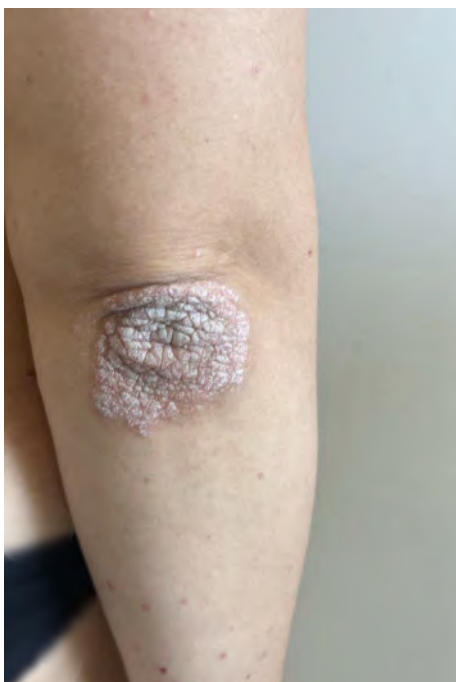


FIGURE 3. Erythematous-squamous plaque with clear-cut margins in a patient with psoriasis.

esis via the nuclear hormone receptor – the vitamin D receptor in melanocytes. Tyrosinase catalyses the oxidative transformation of thyroxine into dihydroxyphenylalanine, from which melanins are then formed. It has additionally been reported that the active form of vitamin D decreases apoptotic activity in melanocytes induced by ultraviolet type B radiation. Like many other autoimmune diseases, vitiligo is also associated with low levels of vitamin D, although the mechanism behind it is not yet clear ^{1,15}. A direct correlation between vitamin D deficiency and the severity and/or extent of vitiligo on the body surface has not been demonstrated. Yet, it was observed that vitamin D supplementation in patients with vitiligo with a vitamin D deficiency led to a reduction in lesion size after 6 months of treatment compared to the control, so patients who only received topical cortisone therapy. Preliminary data suggests that topical application of vitamin D analogues may exert a therapeutic effect in patients with vitiligo. Indeed, it has been observed that the additional use of topical calcipotriol or tacalcitol over NB-UVB may exert a synergistic therapeutic effect on vitiligo ¹⁶.

Other possible associations between cutaneous diseases and vitamin D are being in-



FIGURE 4. Sharp-edged achromic maculae on the right thigh to be attributed to vitiligo.

vestigated, such as systemic lupus erythematosus, systemic sclerosis, alopecia areata, mycosis fungoides, polymorphous light eruption and ichthyosis ¹.

CONCLUSIONS

Vitamin D plays a key role in skin health and its deficiency may contribute to the pathogenesis of some skin diseases, both neoplastic and immune-mediated ¹⁴.

Exposure to the sun can certainly increase vitamin D levels but is also a risk factor and thus photoprotection remains a key element in preventing skin cancer ². Sun exposure is a useful tool if used correctly, through the use of sunscreens and avoiding the resulting erythema, which is a known marker of DNA damage ².

Vitamin D deficiency is associated with significantly worse overall survival in melanoma patients. Five-year survival is 90% if serum vitamin D levels exceed the 10 ng/ml threshold but drops to 84% if levels fall below the threshold.

Studies with eczemas, such as AD, are also particularly interesting because they are very

common in the adult and paediatric population. High levels of vitamin D in umbilical cord blood have been associated with a reduced prevalence of eczema at/near the age of one year ¹⁷. Oral vitamin D supplementation is indicated for the correction and prevention of hypovitaminosis D in the general population and in patients with skin diseases. To date, there is no established data confirming its role in the treatment of dermatological diseases in the absence of a documented deficiency ¹².

Bibliography

- ¹ Bergqvist C, Ezzedine K. Vitamin D and the skin: what should a dermatologist know? *G Ital Dermatol Venereol* 2019;154:669-680. <https://doi.org/10.23736/S0392-0488.19.06433-2>
- ² Kechichian E, Ezzedine K. Vitamin D and the skin: an update for dermatologists. *Am J Clin Dermatol* 2018;19:223-235. <https://doi.org/10.1007/S40257-017-0323-8>
- ³ Gisondi P, Romanelli M, Dini V, et al. Deficit di vitamina D in dermatologia - Linee guida e raccomandazioni Sidemast. Published online 2015.
- ⁴ Autier P, Mullie P, Macacu A, et al. Effect of vitamin D supplementation on non-skeletal disorders: a systematic review of meta-analyses and randomised trials. *Lancet Diabetes Endocrinol* 2017;5:986-1004. [https://doi.org/10.1016/S2213-8587\(17\)30357-1](https://doi.org/10.1016/S2213-8587(17)30357-1)
- ⁵ Bellinato F, Gisondi P. The role of vitamin D in atopic dermatitis. *Vitamin D UpDates* 2021;4:4-7. <https://doi.org/10.30455/2611-2876-2021-1e>
- ⁶ Paolino G, Moliterni E, Corsetti P, et al. Vitamin D and melanoma: state of the art and possible therapeutic uses. *G Ital Dermatol Venereol* 2019;154:64-71. <https://doi.org/10.23736/S0392-0488.17.05801-1>
- ⁷ Liang G, Nan H, Qureshi AA, et al. Predictive plasma 25-hydroxyvitamin D levels and risk of non-melanoma skin cancer in women. *PLoS One* 2012;7(4). <https://doi.org/10.1371/JOURNAL.PONE.0035211>
- ⁸ Ombra MN, Paliogiannis P, Doneddu V, et al. Vitamin D status and risk for malignant cutaneous melanoma: recent advances. *Eur J Cancer Prev* 2017;26:532-541. <https://doi.org/10.1097/CEJ.0000000000000334>
- ⁹ Caini S, Boniol M, Tosti G, et al. Vitamin D and melanoma and non-melanoma skin cancer risk and prognosis: a comprehensive review and meta-analysis. *Eur J Cancer* 2014;50:2649-2658. <https://doi.org/10.1016/J.EJCA.2014.06.024>
- ¹⁰ Paolino G, Moliterni E, Didona D, et al. Clinicopathological features, vitamin D serological levels and prognosis in cutaneous melanoma of shield-sites: an update. *Medical Oncology* 2015;32:1-7. <https://doi.org/10.1007/S12032-014-0451-4/METRICS>
- ¹¹ Byremo G, Rød G, Carlsen KH. Effect of climatic change in children with atopic eczema. *Allergy* 2006;61:1403-1410. <https://doi.org/10.1111/J.1398-9995.2006.01209.X>
- ¹² Barrea L, Savanelli MC, Di Somma C, et al. Vitamin D and its role in psoriasis: an overview of the dermatologist and nutritionist. *Rev Endocr Metab Disord* 2017;18:195-205. <https://doi.org/10.1007/s11154-017-9411-6>
- ¹³ Lee YH, Song GG. Association between circulating 25-hydroxyvitamin D levels and psoriasis, and correlation with disease severity: a meta-analysis. *Clin Exp Dermatol* 2018;43:529-535. <https://doi.org/10.1111/CED.13381>
- ¹⁴ Ren Y, Liu J, Li W, et al. Causal associations between vitamin D levels and psoriasis, atopic dermatitis, and vitiligo: a bidirectional two-sample mendelian randomization analysis. *Nutrients* 2022;14:5284. <https://doi.org/10.3390/NU14245284/S1>
- ¹⁵ Upala S, Sanguaneko A. Low 25-hydroxyvitamin D levels are associated with vitiligo: a systematic review and meta-analysis. *Photodermatol Photoimmunol Photomed* 2016;32:181-190. <https://doi.org/10.1111/PHPP.12241>
- ¹⁶ Liu X, Yao Z, Wang Y, Chai L, Zhou X. Vitamin D analogs combined with different types of phototherapy in the treatment of vitiligo: A systematic review of randomized trials and within-patient studies. *Int Immunopharmacol* 2022;109:108789. <https://doi.org/10.1016/j.intimp.2022.108789>
- ¹⁷ Liu YY, Zhou XJ, Li YC. The relationship between vitamin D levels in umbilical cord blood and infantile eczema. *J Obstet Gynaecol* 2022;42:2813-2817. <https://doi.org/10.1080/01443615.2022.2109948>

Cholecalciferol or calcifediol? A question of narrative!

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Abstract

Over the last decade, significant progress has been made in strategies for the prevention and treatment of vitamin D deficiency thanks to clinical trials and pharmaco-kinetic studies, which have also made it possible to define the pharmacological properties of cholecalciferol and calcifediol.

Although cholecalciferol and calcifediol are often considered and used equally in clinical practice, there are a number of significant differences between them, both pharmacologically and clinically, that need to be taken into account when choosing the most appropriate strategy for treating/preventing vitamin D deficiency and for the prevention of fragility fractures.

In particular, calcifediol has recently been proposed as the drug of choice as an alternative to cholecalciferol in treating vitamin D deficiency, due to a greater potency and rapidity in normalising 25-hydroxy-vitamin D serum concentration. However, a thorough evaluation of the available evidence and in particular of randomised controlled clinical trials, confirms the primacy of cholecalciferol in the prevention and treatment of vitamin D deficiency and in the primary and secondary prevention of fragility fractures in osteoporotic individuals in combination with an antiresorptive or osteoanabolic drug. Therefore, based on current evidence, the use of calcifediol should be limited to particular situations, such as malabsorption syndromes, severe obesity or liver failure.

INTRODUCTION

Epidemiological studies describe a high prevalence of hypovitaminosis D in the general adult and elderly population that is not appropriately integrated with vitamin D supplements, particularly in at-risk sub-populations such as frail or chronically ill individuals, patients suffering from malabsorption syndrome and institutionalised subjects¹⁻³.

Vitamin D, and in particular its deficiency, plays a significant role in the pathogenesis of fragility fractures, falls and numerous acute and chronic 'extra-skeletal' clinical conditions (for example, COVID-19 and infectious diseases, rheumatological diseases, neoplasms, diabetes and cardiovascular diseases)¹⁻⁷. In this clinical-epidemiological context, as expected, growing international debate has arisen on the most appropriate therapeutic strategies for the prevention and treatment of vitamin D deficiency⁷⁻¹². In particular, talk has recently focused on a

specific question, namely whether it is more appropriate to use calcifediol instead of the traditionally-used cholecalciferol in the treatment of hypovitaminosis D⁹⁻¹². Numerous Randomised Controlled Trials (RCTs) and pharmaco-kinetic studies have attempted to answer this question, having broadened knowledge of the pharmacological and clinical effects of these two molecules. Although the results of the most recent studies have rendered it possible to generate significant evidence with clinical impact, the numerous limitations of the published studies (such as the choice of surrogate outcomes and the extreme heterogeneity of the dosages used) have resulted in significant confusion on the subject, resulting in a narrative that is not always appropriate.

The aim of our narrative review is to summarise some of the pharmacological and non-pharmacological characteristics of cholecalciferol and calcifediol, bringing the

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narrative back to a clinical level in order to define their role in daily clinical practice.

VITAMIN D PRODUCTION AND METABOLISM

A thorough knowledge of the physiology and metabolism of vitamin D is the essential foundation and "condicio sine qua non" for settling the question of whether it is more appropriate to use cholecalciferol or calcifediol in clinical practice.

The term vitamin D normally loosely refers to both animal- and human-produced vitamin D₃ (cholecalciferol) and plant-produced vitamin D₂ (ergocalciferol)^{1,10-12}.

The main source of vitamin D for the body should be endogenous vitamin D derived from the conversion of 7-dehydrocholesterol following exposure of the skin to ultraviolet rays of a specific wavelength. This mechanism should produce the preponderant quota (approximately 80%) of vitamin D (vitamin D₃) for the body's needs, whilst smaller amounts (approximately 20%) of vitamin D₃ and vitamin D₂ can be taken in through diet¹.

The skin's production of cholecalciferol is strongly influenced by the seasons, latitude, the characteristics of the skin exposed to the sun, the use of sunscreen and by age¹. A smaller quota of vitamin D₃ can be taken from food, in particular animal fats, whilst the quota of vitamin D₂ in vegetable fats is absolutely negligible¹. In some countries, the liberal fortification of food with cholecalciferol is stored in the adipose tissue, which releases small amounts. This is also one of the reasons why obese subjects are at a higher risk of deficiency as a result of 'dilution' in a larger adipose mass^{1,11-14}. Finally, the high fat-solubility of vitamin D also results in a prolonged functional half-life, estimated to be around 2 months¹². Vitamin D remains in the bloodstream for a short time so its blood concentrations are very low (1-2 ng/ml)¹.

To become metabolically active, vitamin D must undergo two enzymatic hydroxylation processes, which occur mainly in the liver and kidney^{1,12}. During hepatic transit, vitamin D is converted to 25-hydroxy-vitamin D [25(OH)D] by the enzyme 25-hydroxylase. The process of transformation of vitamin D into 25(OH)D can occur even in the presence of a significant reduction in functioning liver tissue, although a higher prevalence of hypovitaminosis D is evident in patients with HCV-related chronic hepatitis¹.

25(OH)D, also known as calcifediol, has a high affinity for *Vitamin D Binding Protein* (VDBP) and is the main blood metabolite of vitamin D. By far, its concentrations are the most reliable index of a subject's vitamin D status¹. Serum 25(OH)D dosage is an accurate indicator of our vitamin D deposits. Therefore, the definition of a subject's vitamin D status (deficiency, insufficiency and sufficiency) is currently based exclusively on the interpretation of serum 25(OH)D levels (Tab. I).

25(OH)D (or calcifediol) is a partially hydrophilic metabolite and is only deposited in liver and muscle¹. The half-life of 25(OH)D is shorter than that of vitamin D, such that requirements are met for no more than 12-18 days^{1,8}. 25(OH)D has a low affinity for the specific Vitamin D Receptor (VDR) and thus needs to be converted into calcitriol or 1,25-dihydroxy-vitamin D [1,25(OH)₂D], in order to become metabolically active^{1,8}. It has been estimated that calcifediol, or 25(OH)D, possesses approximately 50 times less affinity for the VDR than calcitriol or 1,25(OH)₂D¹⁵. Despite the lower affinity for the VDR, recent experimental studies have shown that calcifediol can produce genomic (stimulation of gene transcription) and non-genomic (formation of cellular second messengers, phosphorylation of certain proteins) cellular effects through binding to nuclear and/or membrane receptors¹⁵.

Conversion to 1,25(OH)₂D by 1- α -hydroxylase occurs mainly in the kidney, but also can be actuated in other tissues¹. The largest share of 1,25(OH)₂D, and that which is most relevant in the control of mineral metabolism, is produced in the renal proximal tubules. The production of 1,25(OH)₂D by

1- α -hydroxylase requires the presence of Parathyroid Hormone (PTH) and is modulated by serum levels of calcium, phosphorus and FGF23^{1,12}. 1,25(OH)₂D is not deposited in the tissue and has a very short half-life^{1,8}.

Renal insufficiency progressively reduces the production of 1,25(OH)₂D¹. However, a significant deterioration in 1- α -hydroxylase activity, such as to permitted an increased dietary vitamin D intake, facilitated increased dietary vitamin D intake, although this strategy does not always optimise vitamin D intake¹.

Vitamin D is highly fat-soluble and this fat-solubility significantly influences its pharmacological characteristics. Its absorption in the gastrointestinal tract requires the presence of bile acids and takes place via the lymphatic system¹⁻¹². After entering the bloodstream, vitamin D no longer be able to ensure normal hormone levels, is only detectable in the presence of significant impairment of renal function (usually stage 4-5/5D)^{1,16}. It must be emphasised, however, that even under conditions of severe compromise of renal 1- α -hydroxylase activity, 25(OH)D levels must be kept in the normal range to ensure an adequate substrate for extra-renal 1- α -hydroxylases^{1,16}.

The 1,25(OH)₂D (active metabolite) binding to a specific receptor (VDR, which is present both in the nucleus and in the cell membrane), produces the final effect of vitamin D at a cellular level¹. This effect occurs either through the stimulation of gene transcription (genomic mechanism) or through the formation of cellular second messengers or the phosphorylation of certain proteins (non-genomic mechanism)¹. Receptors for vitamin D are ubiquitous in the body.

TABLE I.
Interpretation of serum 25(OH)D levels (from Adami et al., 2011 and Rossini et al., 2016, mod.)^{1,2}.

Definition	Unit of measurement of 25(OH)D	
	nmol/L	ng/ml
Severe deficiency	< 25	< 10
Deficiency	25-50	10-20
Insufficiency	50-75	20-30
Optimum range	75-125	30-50
Excess	> 250	> 100
Intoxication	> 375	> 150

CHOLECALCIFEROL, CALCIFEDIOL AND THE LONG-STANDING ISSUE OF NORMALISING 25(OH)D CONCENTRATION

In addition to the two natural forms of vitamin D, vitamin D₃ (cholecalciferol) and vitamin D₂ (ergocalciferol, in disuse), numerous pharmaceuticals/metabolites with vitamin D activity have become available in daily clinical practice^{1,2,8}. Some have been synthesised and used prevalently in specific areas, such as the treatment of systemic disorders of mineral metabolism in chronic kidney disease or hypoparathyroidism, and thus have no relevance to the question under review. Yet, cholecalciferol and calcifediol, as already explained, are by far the two molecules most investigated and used for correcting hypovitaminosis D and for the prevention of fragility fractures in the non-nephropathic population.

Cholecalciferol

Cholecalciferol (D₃) is the natural vitamin D compound of animal/human origin. As described, cholecalciferol is a prohormone, precursor of the two hydroxylated forms (25(OH)D and 1,25(OH)₂D) of vitamin D and thus needs to undergo two natural hydroxylation processes to be transformed into its metabolically active form^{1,8}.

Cholecalciferol is strongly lipophilic. In connection with this characteristic, gastrointestinal absorption is influenced by the presence of bile acids, occurring via the lymphatic system and can be significantly impaired in the case of malabsorption.¹² Also by virtue of its lipophilicity, cholecalciferol is normally stored in adipose tissue, where it creates deposits from which it is slowly released. Precisely for this reason, it has a rather short blood half-life (estimated T_{1/2} of 19–25 hours) but a much longer functional half-life (several weeks)⁸. The high functional half-life of cholecalciferol is one of its main strengths in clinical use, making it an extremely flexible and adaptable product in practice, allowing for intermittent administration regimes^{1,2}. Therefore, if on the one hand, high lipophilicity represents an advantage in relation to the functional half-life, on the other it can constitute a disadvantage – as mentioned – in obese subjects (high dilution) and in patients suffering from malabsorption (reduced intestinal absorption).

Cholecalciferol is available in formulations

for oral and intramuscular use. With the exception of particular clinical conditions (malabsorption syndromes), oral administration is preferable due to being superior in terms of efficacy in raising serum 25(OH)D concentration compared to the intramuscular formulation^{17,18}.

In the RCTs designed to identify the most appropriate dosage and treatment regimen for normalising and maintaining optimal 25(OH)D concentration (30–50 ng/ml), cholecalciferol has been used in broadly varying dosages and administration regimens, going from doses of 400–4,000 IU per day to doses of 25,000–50,000 IU per month, also utilising therapeutic “bolus” doses of up to 600,000 IU (not recommended). In terms of increased 25(OH)D concentration, the RCTs have generally shown great heterogeneity in the response to supplementation with standard doses of cholecalciferol. This significant heterogeneity, which makes the dose-response to treatment less predictable, would appear to be linked to numerous factors (some of which are not fully elucidated), such as the basal 25(OH)D value, the Body Mass Index and factors affecting intestinal absorption and metabolism^{12–14,19,20}.

Taking into account the interfering factors illustrated and considering the results of the main RCTs, however, it can be stated that when used at appropriate dosages and treatment regimens, cholecalciferol is able to effectively normalise and maintain concentrations of 25(OH)D within the optimal/desirable range (30–50 ng/ml). For severe hypovitaminosis D (<10 ng/ml), the most appropriate approach, being broadly supported by the Italian guidelines, requires the administration of a therapeutic dose of 3,000–10,000 IU per day for 1–2 months, followed by a maintenance dose of approximately 2,000 IU per day^{1,2,21}. In subjects with less severe hypovitaminosis D and in patients who are candidates for remineralising therapy (anti-resorptive or osteoanabolic), the most recent Italian guidelines suggest daily doses (or cumulative equivalents) of between 800 IU and 2,000 IU per day (with a single maximum dose not exceeding 100,000 IU)²¹.

The main concern raised with respect to the use of cholecalciferol and the treatment regimes illustrated is the “relative slowness” of cholecalciferol in normalising 25(OH)D concentration in absolute terms and with respect to calcifediol^{11–14}. As we

shall see, this aspect is one of the main battle horses for advocates of the use of calcifediol in clinical practice. In this context, we thus feel it is important to emphasise the results of a recent RCT, published by Fassio et al., which challenged the aforementioned assumption²². The drug-kinetics study by Fassio et al.²², investigating the effect of three different cholecalciferol treatment regimens (10,000 IU per day for 8 weeks followed by 1,000 IU per day for 4 weeks; 50,000 IU per week for 12 weeks; 100,000 IU every 2 weeks for 12 weeks), showed that supplementation with 10,000 IU cholecalciferol per day for 8 weeks, followed by 1,000 IU per day for 4 weeks in healthy subjects with hypovitaminosis (baseline 25(OH)D value averaging 14 ng/ml), was able to result in achieving the target concentration of 25(OH)D >20 ng/ml in all subjects in just two weeks. Similar results have been described for the other two treatment regimens. Furthermore, after four weeks of treatment, almost all subjects had achieved a value of 25(OH)D >30 ng/ml. This treatment regimen proved to be safe since there were no cases in which the concentration of serum 25(OH)D exceeded the safety limit of 100 ng/ml (Tab. I).

In conclusion, based on the evidence described, cholecalciferol must be considered as the therapy of choice in the treatment and prevention of hypovitaminosis D.

Calcifediol

Calcifediol [25(OH)D] is the hepatic metabolite of vitamin D and can roughly be said to differ from cholecalciferol due to the presence of a hydroxyl group at position C-25¹². Thus, along the vitamin D metabolism pathway, calcifediol is a step up from cholecalciferol to the biologically-active form (calcitriol)¹².

25-hydroxylation confers certain properties to calcifediol that underlie its different pharmacokinetics and pharmacodynamics, being the prerequisite for proposing it as an alternative to cholecalciferol. Being more hydrophilic, calcifediol is absorbed directly into the portal system and not through the lymphatic system, so does not undergo ‘dilution’ in adipose tissue. Furthermore, although with less affinity than calcitriol, it is able to bind to the VDR and potentially have cellular effects that are genomic (stimulation of gene transcription) and non-genomic (formation of cellular

second messengers, phosphorylation of certain proteins)¹⁵.

Therefore, calcifediol would present some strongly emphasised pharmacological and clinical advantages, which can be summed up in five points: 1) Greater rapidity and potency (compared to cholecalciferol) in increasing serum 25(OH)D concentration; 2) More linear and predictable dose-response curve compared to cholecalciferol, independent of basal 25(OH)D concentration and other factors; 3) Efficacy even in the presence of liver function impairment, due to not requiring hepatic hydroxylation; 4) Greater efficacy (compared to cholecalciferol) in obese subjects, not being sequestered from adipose tissue; 5) Greater efficacy in subjects suffering from malabsorption syndrome, in relation to the different intestinal absorption mechanism (compared to cholecalciferol)¹². Overall, these aspects – which can be summarised as the greater potency and speed of calcifediol – have been corroborated by the results of several RCTs comparing the efficacy of cholecalciferol and calcifediol in normalising serum 25(OH)D concentration in subjects with hypovitaminosis D^{9-14,23-25}.

As a whole, the studies would demonstrate that at “defined comparable” doses, calcifediol would be able to produce a faster and greater increase in 25(OH)D concentration than cholecalciferol. What's more, calcifediol would have a relative potency compared to cholecalciferol that is around 2–8 times greater. The extreme variability in the estimate of relative potency would be attributable to the doses used, the basal value of the serum 25(OH)D concentration (which can influence the cholecalciferol response) and the non-linear dose-response curve of cholecalciferol (higher 25(OH)D increase for very low basal 25(OH)D values and vice-versa)^{11,12}. Therefore, when observing the growth curves of 25(OH)D concentration during therapy with cholecalciferol and calcifediol, the greater speed and potency of calcifediol is evident. These findings were also confirmed in studies conducted in elderly or overweight/obese subjects and in patients suffering from malabsorption syndrome^{13-14,26}.

Based on these results, recent Italian guidelines have included calcifediol in therapeutic strategies for the management of hypovitaminosis D²¹. In particular, in subjects with osteomalacia or with a serum concentration of 25(OH)D <10 ng/ml, calcifediol (as

an alternative to cholecalciferol) has been suggested at a dose of 20-40 mcg per day for 20-30 days, before switching to a maintenance dose²¹. This recommendation has been proposed limited to specific conditions where a rapid normalisation of serum 25(OH)D concentration is deemed necessary. From the time of Aesop through to “The Canterbury Tales” and “The Merchant of Venice”, the proverb “*all that glitters is not gold*” has been a well-known expression that takes on particular relevance in this context.

Indeed, the interpretation of comparative studies between cholecalciferol and calcifediol deserves to be supplemented with some considerations aimed at correcting the narrative, as is also emphasised by the Italian guidelines and some literature reviews^{10,11,21}. The limited half-life of calcifediol (12-18 days as opposed to several weeks for cholecalciferol) and the fact that it is not able to lead to a repletion of vitamin D stores (depositing only in liver and muscle) may be a problem in the event of reduced adherence or persistence to treatment^{1,8}. Although there are few published studies on the negative effects of reduced adherence/persistence to treatment, a very recent study conducted in patients initially hypovitaminous with calcifediol supplementation showed that after discontinuation of calcifediol treatment, there was already evidence of a progressive and significant reduction in serum 25(OH)D concentration in the first few weeks, which restabilised to within the deficiency range between 8 and 12 months²³. In relation to hydroxylation, calcifediol is a step up from cholecalciferol towards the biologically-active form and is thus partially released from the physiological control mechanisms of vitamin D metabolism^{10,21}. Although reports of intoxication (hypercalcaemia) are relatively few and mostly related to inappropriately high dosages due to intake errors, the use of calcifediol is strictly limited to defined doses and may in some circumstances require frequent monitoring of serum 25(OH)D and calcium values in order to identify intoxication and hypercalcaemia at an early stage^{10,21,27}. Based on literature data, this risk is inexistent with cholecalciferol, just as no serological monitoring is deemed necessary during treatment with vitamin D₃^{10,21}.

At a pharmacodynamic level, few studies

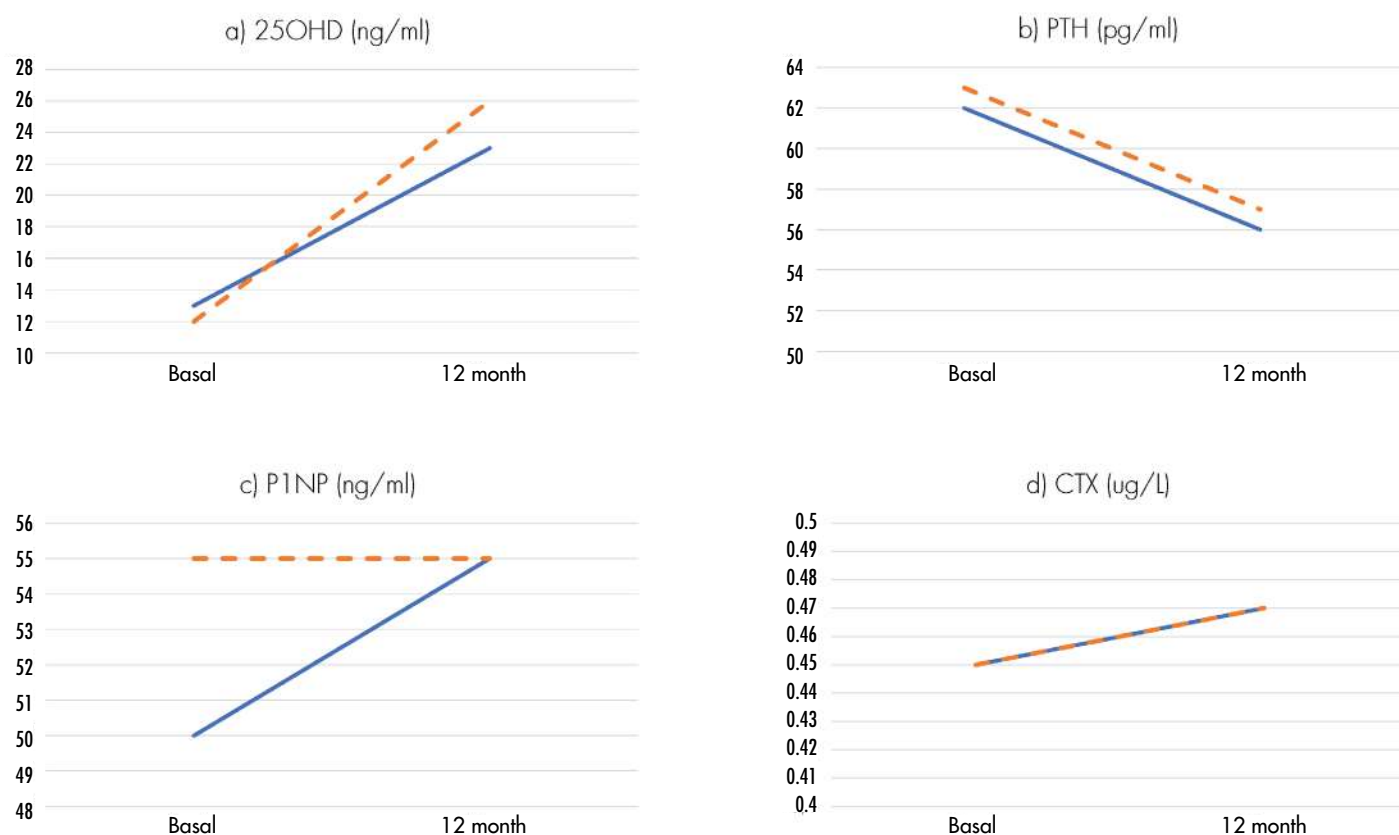
have investigated the effect of cholecalciferol and calcifediol on vitamin D metabolites, regulators of calcium and phosphorus homeostasis, markers of bone removal and inhibitors of the Wnt system²⁸. Without going into too much detail, it should be pointed out that with respect to the effects on parathyroid hormone (decrease) or bone remodelling markers, the results of the comparison studies are not univocal in establishing a superiority of calcifediol over cholecalciferol (Fig. 1)^{23,24,26}. In this context, however, the most critical issue with respect to the use of calcifediol is the absence of evidence in terms of antifracture efficacy^{10,11,21}.

CHOLECALCIFEROL AND CALCIFEDIOL IN FRACTURE PREVENTION

In the introduction to our review, we mentioned the importance of narrative in settling the matter of whether cholecalciferol is superior to calcifediol or vice-versa. Indeed, reviewing the literature makes it extremely clear that the RCTs have only focused on the certainly important outcome of normalising the serum concentration of 25(OH)D, whilst systematically failing to investigate one of the most important endpoints of vitamin D treatment, namely a reduction in the incidence of fragility fractures, not to mention the effect on falls and potential extra-skeletal impacts.

No extensive literature research is required to support the anti-fracture efficacy of cholecalciferol in at-risk, vitamin D-deficient populations when used in appropriate doses (and in combination with calcium supplementation)^{10,11,29}.

In view of overwhelming evidence in support of the anti-fracture efficacy of cholecalciferol supplementation, the contribution of the RCTs conducted with calcifediol is decidedly limited. A recent Cochrane meta-analysis, which reviewed RCTs of therapeutic intervention (fracture risk reduction) conducted with vitamin D and its metabolites, identified only two studies with calcifediol, which were deemed pertinent on the basis of the quality of the experimental design²⁹. It should be noted that in both studies, the risk of ‘bias’ could not be assessed. On the basis of the results of these two studies, it can be said that there is currently insufficient scientific evidence to support the anti-fracture efficacy of calcifediol^{29,30}. In the most recent RCT published by Peacock et al., for example, the incidence

**FIGURE 1.**

The baseline and 12-month mean value of 25(OH)D (a), PTH (b), P1NP (c) and CTX (d) concentrations in patients treated with cholecalciferol (blue solid line) or calcifediol (orange dashed line) (Pérez-Castrillón et al., 2023, mod.)²³.

of new vertebral and non-vertebral fractures was similar in subjects treated for 4 years with calcium (750 mg daily), calcifediol (15 ug daily) or a placebo³⁰.

To support the correct narrative referring to a reduction in fracture risk, what is perhaps the most relevant aspect of this narrative, namely the fact that in all of the most successful RCTs registering pharmaceuticals for fracture prevention, it should be noted that patients were supplemented with cholecalciferol (and calcium) in varying dosages. Therefore, the anti-fracturing efficacy of bisphosphonates, teriparatide, denosumab and romosozumab has been demonstrated in the presence of supplementation with cholecalciferol and calcium^{10,11,21}. It can be concluded, therefore, that robust evidence unequivocally demonstrating an effect of calcifediol on fracture reduction is lacking.

CONCLUSIONS

In conclusion, in daily clinical practice, cholecalciferol should be considered the therapy of choice in the prevention and treatment of vitamin D deficiency, as well as in the primary and secondary prevention of fragility fractures in osteoporotic individuals in combination with an anti-resorptive or osteoanabolic drug. Calcifediol may offer some advantages in terms of its possible increased speed and potency in raising and normalising serum 25(OH)D concentration, although this claim needs further investigation in view of the recent work published by Fassio et al.²². In this regard, it is also worth emphasising that the extent that this different drug-kinetics may lead to greater clinical benefits (such as a reduction in the risk of fracture) has not been clarified, in view of a lack of clinical data from RCTs.

It thus seems inappropriate, as is also stated

in the Italian guidelines, to recommend calcifediol, a drug of choice and alternative to cholecalciferol in the prevention/treatment of hypovitaminosis D and/or in the prevention of fragility fractures in osteoporotic patients in combination with an antiresorptive or osteoanabolic^{1,2,21}. As recently suggested, calcifediol may be considered as a therapy of choice in particular clinical situations such as obesity, advanced chronic hepatopathy and malabsorption syndrome^{1,2,21}.

Randomised, controlled clinical trials will be necessary to define the efficacy of calcifediol in different clinical settings, in terms of skeletal and extra-skeletal benefits.

Bibliography

- Adami S, Romagnoli E, Carnevale V, et al. [Guidelines on prevention and treatment of vitamin D deficiency. Italian Society for

- Osteoporosis, Mineral Metabolism and Bone Diseases (SIOMMMS)]. *Reumatismo* 2011;63:129-147.
- Rossini M, Adami S, Bertoldo F, et al. Guidelines for the diagnosis, prevention and management of osteoporosis. *Reumatismo* 2016;68:1-39. <https://doi.org/10.4081/reumatismo.2016.870>
- 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. *Eur J Endocrinol* 2019;180:P23-P54. <https://doi.org/10.1530/EJE-18-0736>
- Giannini S, Giusti A, Minisola S, et al. The Immunologic Profile of Vitamin D and Its Role in Different Immune-Mediated Diseases: An Expert Opinion. *Nutrients* 2022;14:473. <https://doi.org/10.3390/nu14030473>
- Autier P, Boniol M, Pizot C, et al. Vitamin D status and ill health: a systematic review. *Lancet Diabetes Endocrinol* 2014;2:76-89. [https://doi.org/10.1016/S2213-8587\(13\)70165-7](https://doi.org/10.1016/S2213-8587(13)70165-7)
- Bischoff-Ferrari HA, Willett WC, Orav EJ, et al. A pooled analysis of vitamin D dose requirements for fracture prevention. *N Engl J Med* 2012;367:40-49. <https://doi.org/10.1056/NEJMoa1109617>
- Avenell A, Mak JC, O'Connell D. Vitamin D and vitamin D analogues for preventing fractures in post-menopausal women and older men. *Cochrane Database Syst Rev* 2014;(4):CD000227. <https://doi.org/10.1002/14651858.CD000227.pub4>
- Mazzaferro S, Goldsmith D, Larsson TE, et al. Vitamin D metabolites and/or analogs: which D for which patient? *Curr Vasc Pharmacol* 2014;12:339-349. <https://doi.org/10.2174/15701611113119990024>
- Jetter A, Egli A, Dawson-Hughes B, et al. Pharmacokinetics of oral vitamin D(3) and calcifediol. *Bone* 2014;59:14-19.
- Sosa Henríquez M, Gómez de Tejada Romero MJ. Cholecalciferol or calcifediol in the management of vitamin D deficiency. *Nutrients* 2020;12:1617. <https://doi.org/10.3390/nu12061617>
- Cesareo R, Falchetti A, Attanasio R, et al. Hypovitaminosis D: is it time to consider the use of calcifediol? *Nutrients* 2019;11:1016. <https://doi.org/10.3390/nu11051016>
- Jodar E, Campusano C, de Jongh RT, et al. Calcifediol: a review of its pharmacological characteristics and clinical use in correcting vitamin D deficiency. *Eur J Nutr* 2023;62:1579-1597. <https://doi.org/10.1007/s00394-023-03103-1>
- Charoenngam N, Mueller PM, Holick MF. Evaluation of 14-day concentration-time curves of vitamin D₃ and 25-hydroxyvitamin D₃ in healthy adults with varying body mass index. *Anticancer Res* 2022;42:5095-5100. <https://doi.org/10.21873/anticancer.16019>
- Charoenngam N, Kalajian TA, Shirvani A, et al. A pilot-randomized, double-blind crossover trial to evaluate the pharmacokinetics of orally administered 25-hydroxyvitamin D₃ and vitamin D₃ in healthy adults with differing BMI and in adults with intestinal malabsorption. *Am J Clin Nutr* 2021;114:1189-1199. <https://doi.org/10.1093/ajcn/nqab123>
- Donati S, Palmieri G, Aurilia C, et al. Rapid non-genomic actions of 25(OH)D₃: state of the art. *Int J Bone Frag* 2023;3:27-31. <https://doi.org/10.57582/IJBF.230301.027>
- Giusti A, Fusaro M. [The treatment of the patient presenting with chronic kidney disease (CKD) and fragility fractures]. *G Ital Nefrol* 2017;34:2017-vol6.
- Romagnoli E, Mascia ML, Cipriani C, et al. Short and long-term variations in serum calciotropic hormones after a single very large dose of ergocalciferol (vitamin D2) or cholecalciferol (vitamin D3) in the elderly. *J Clin Endocrinol Metab* 2008;93:3015-3020. <https://doi.org/10.1210/jc.2008-0350>
- Cipriani C, Romagnoli E, Pepe J, et al. Long-term bioavailability after a single oral or intramuscular administration of 600,000 IU of ergocalciferol or cholecalciferol: implications for treatment and prophylaxis. *J Clin Endocrinol Metab* 2013;98:2709-2715. <https://doi.org/10.1210/jc.2013-1586>
- Giusti A, Barone A, Pioli G, et al. Heterogeneity in serum 25-hydroxyvitamin D response to cholecalciferol in elderly women with secondary hyperparathyroidism and vitamin D deficiency. *J Am Geriatr Soc* 2010;58:1489-1495. <https://doi.org/10.1111/j.1532-5415.2010.02970.x>
- Gallagher JC, Sai A, Templin T 2nd, et al. Dose response to vitamin D supplementation in postmenopausal women: a randomized trial. *Ann Intern Med* 2012;156:425-437. <https://doi.org/10.7326/0003-4819-156-6-201203200-00005>
- Bertoldo F, Cianferotti L, Di Monaco M, et al. Definition, assessment, and management of vitamin D inadequacy: suggestions, recommendations, and warnings from the Italian Society for Osteoporosis, Mineral Metabolism and Bone Diseases (SIOMMMS). *Nutrients* 2022;14:4148. <https://doi.org/10.3390/nu14194148>
- Fassio A, Adami G, Rossini M, et al. Pharmacokinetics of oral cholecalciferol in healthy subjects with vitamin D deficiency: a randomized open-label study. *Nutrients* 2020;12:1553. <https://doi.org/10.3390/nu12061553>
- Pérez-Castrillón JL, Dueñas-Laita A, Gómez-Alonso C, et al. Long-term treatment and effect of discontinuation of calcifediol in postmenopausal women with vitamin D deficiency: a randomized trial. *J Bone Miner Res* 2023;38:471-479. <https://doi.org/10.1002/jbmr.4776>
- Pérez-Castrillón JL, Dueñas-Laita A, Brandi ML, et al. Calcifediol is superior to cholecalciferol in improving vitamin D status in postmenopausal women: a randomized trial. *J Bone Miner Res* 2021;36:1967-1978. <https://doi.org/10.1002/jbmr.4387>
- Quesada-Gomez JM, Bouillon R. Is calcifediol better than cholecalciferol for vitamin D supplementation? *Osteoporos Int* 2018;29:1697-1711. <https://doi.org/10.1007/s00198-018-4520-y>
- Ruggiero C, Baroni M, Bini V, et al. Effects of weekly supplementation of cholecalciferol and calcifediol among the oldest-old people: findings from a randomized pragmatic clinical trial. *Nutrients* 2019;11:2778. <https://doi.org/10.3390/nu11112778>
- Agencia Española de Medicamentos y Productos Sanitarios (AEMPS). Nota Informativa. Casos Graves de Hipercalcemia por Sobredosificación en Pacientes Adultos y en Pediatría. Fecha de Publicación: 19 de Marzo de 2019. Available online: <https://www.aemps.gob.es/informa/notas-informativas/medicamentos-y-salud-humana-3/seguridad-1/vitamina-d-casos-graves-de-hipercalcemia-por-sobredosificacion-en-pacientes-adultos-y-en-pediatria/>
- Fassio A, Gatti D, Rossini M, et al. Pharmacodynamics of oral cholecalciferol in healthy individuals with vitamin D deficiency: a randomized trial. *Ann Intern Med* 2012;156:425-437. <https://doi.org/10.7326/0003-4819-156-6-201203200-00005>

ciency: a randomized open-label study. *Nutrients* 2021;13:2293. <https://doi.org/10.3390/nu13072293>

²⁹ Peacock M, Liu G, Carey M, et al. Effect of calcium or 25OH vitamin D₃ dietary supplementation on bone loss at the hip in men and women over the age of 60. *J*

Clin Endocrinol Metab 2000;85:3011-3019. <https://doi.org/10.1210/jcem.85.9.6836>

CARDIOLOGY

- Agarwal P, Agarwal Y, Hameed M. Recent Advances in Association Between Vitamin D Levels and Cardiovascular Disorders. *Curr Hypertens Rep.* 2023 Aug;25(8):185-209. <https://doi.org/10.1007/s11906-023-01246-4>. Epub 2023 May 31. PMID: 37256476
- Al-Oanzi ZH, Alenazy FO, Alhassan HH, et al. The Role of Vitamin D in Reducing the Risk of Metabolic Disturbances That Cause Cardiovascular Diseases. *J Cardiovasc Dev Dis.* 2023 May 11;10(5):209. <https://doi.org/10.3390/jcdd10050209>. PMID: 37233176
- Alkhatib B, Agraib IM, Al-Dalaeen A, et al. Are There Any Correlations between Vitamin D, Calcium, and Magnesium Intake and Coronary and Obesity Indices? *J Am Nutr Assoc.* 2023 May 9:1-8. <https://doi.org/10.1080/27697061.2023.2203225>. Online ahead of print. PMID: 37159492
- Baniasad A, Mokhtari Ardekan A, et al. The relationship between vitamin D and short-term blood pressure variability. *Blood Press Monit.* 2023 Aug 1;28(4):193-198. <https://doi.org/10.1097/MBP.0000000000000652>. Epub 2023 Jun 7. PMID: 37404038
- Carbone F, Liberale L, Libby P, et al. Vitamin D in atherosclerosis and cardiovascular events. *Eur Heart J.* 2023 Jun 20;44(23):2078-2094. <https://doi.org/10.1093/eurheartj/ehad165>. PMID: 36943351
- Dey SK, Kumar S, Rani D, et al. Implications of vitamin D deficiency in systemic inflammation and cardiovascular health. *Crit Rev Food Sci Nutr.* 2023 Jun 23:1-18. <https://doi.org/10.1080/10408398.2023.2224880>. Online ahead of print. PMID: 37350746
- Editors of The Lancet Diabetes & Endocrinology. Expression of Concern-Estimating dose-response relationships for vitamin D with coronary heart disease, stroke, and all-cause mortality: observational and Mendelian randomisation analyses. *Lancet Diabetes Endocrinol.* 2023 Jul 13:S2213-8587(23)00198-5. [https://doi.org/10.1016/S2213-8587\(23\)00198-5](https://doi.org/10.1016/S2213-8587(23)00198-5). Online ahead of print. PMID: 37454668
- Gnudi L, Fountoulakis N, Panagiotou A, et al. Effect of active vitamin-D on left ventricular mass index: Results of a randomized controlled trial in type 2 diabetes and chronic kidney disease. *Am Heart J.* 2023 Jul;261:1-9. <https://doi.org/10.1016/j.ahj.2023.03.003>. Epub 2023 Mar 17. PMID: 36934979
- Graczyk S, Grzeczka A, Paślawska U, et al. The Possible Influence of Vitamin D Levels on the Development of Atrial Fibrillation-An Update. *Nutrients.* 2023 Jun 12;15(12):2725. <https://doi.org/10.3390/nu15122725>. PMID: 37375629
- Hameed I, Malik S, Nusrat K, et al. Effect of vitamin D on postoperative atrial fibrillation in patients who underwent coronary artery bypass grafting: A systematic review and meta-analysis. *J Cardiol.* 2023 Sep;82(3):220-224. <https://doi.org/10.1016/j.jjcc.2023.05.007>. Epub 2023 May 24. PMID: 37236436
- Khalaji A, Behnouch AH, Tajdini M. Association between vitamin D deficiency and vasovagal syncope: A systematic review and meta-analysis. *Clin Cardiol.* 2023 Jul;46(7):721-728. <https://doi.org/10.1002/clc.24035>. Epub 2023 May 24. PMID: 37226313
- Krysiak R, Basiak M, Machnik G, et al. Vitamin D Status Determines Cardiometabolic Effects of Cabergoline in Women with Elevated Prolactin Levels: A Pilot Study. *Nutrients.* 2023 May 14;15(10):2303. <https://doi.org/10.3390/nu15102303>. PMID: 37242186
- Martín Giménez VM, García S, Holick MF, et al. Vitamin D: A Repurposed Anti-Inflammatory Drug At The Cardiovascular Level. *Curr Protein Pept Sci.* 2023 Jun 22. <https://doi.org/10.2174/1389203724666230622162539>. Online ahead of print. PMID: 37350007
- Martín Giménez VM, Reiter RJ, Manucha W. Multidrug nanoformulations of vitamin D, anandamide and melatonin as a synergistic treatment for vascular inflammation. *Drug Discov Today.* 2023 Jun;28(6):103539. <https://doi.org/10.1016/j.drudis.2023.103539>. Epub 2023 Feb 23. PMID: 36828191

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- Parameswaran N. Vitamin D and Its Myriad Disease Associations: Can the Heart be Left Behind? *Indian J Crit Care Med.* 2023 Jul;27(7):463-464. <https://doi.org/10.5005/jp-journals-10071-24491>. PMID: 37502292
- Patel L, Vecchia C, Alicandro G. Serum vitamin D and cardiometabolic risk factors in the UK population. *J Hum Nutr Diet.* 2023 Jun;36(3):1019-1030. <https://doi.org/10.1111/jhn.13075>. Epub 2022 Sep 11. PMID: 35997254
- Pirrotta F, Cavati G, Mingiano C, et al. Vitamin D Deficiency and Cardiovascular Mortality: Retrospective Analysis "Siena Osteoporosis" Cohort. *Nutrients.* 2023 Jul 25;15(15):3303. <https://doi.org/10.3390/nu15153303>. PMID: 37571241
- Rüdiger IH, Andersen MK, Vestergaard AL, et al. Is Vitamin D Deficiency Prothrombotic? A Systematic Review. *Semin Thromb Hemost.* 2023 Jul;49(5):453-470. <https://doi.org/10.1055/s-0042-1756701>. Epub 2022 Sep 29. PMID: 36174611
- Sudharma AA, Siginam S, Husain GM, et al. Atrophic remodeling of the heart during vitamin D deficiency and insufficiency in a rat model. *J Nutr Biochem.* 2023 Sep;119:109382. <https://doi.org/10.1016/j.jnutbio.2023.109382>. Epub 2023 May 19. PMID: 37209952
- Sun X, Liu N, Sun C, et al. The inhibitory effect of vitamin D on myocardial homocysteine levels involves activation of Nrf2-mediated methionine synthase. *J Steroid Biochem Mol Biol.* 2023 Jul;231:106303. <https://doi.org/10.1016/j.jsbmb.2023.106303>. Epub 2023 Mar 28. PMID: 36990164
- Tang L, Zeng H, Yang B, et al. Vitamin D is inversely associated with Monocyte to HDL-C ratio among medical staff in Chengdu, China. *BMC Endocr Disord.* 2023 Jul 12;23(1):149. <https://doi.org/10.1186/s12902-023-01406-2>. PMID: 37438744
- Thompson B, Waterhouse M, English DR, et al. Vitamin D supplementation and major cardiovascular events: D-Health randomised controlled trial. *BMJ.* 2023 Jun 28;381:e075230. <https://doi.org/10.1136/bmj-2023-075230>. PMID: 37380191
- Tikkanen JT, Soliman EZ, Pester J, et al. A randomized clinical trial of omega-3 fatty acid and vitamin D supplementation on electrocardiographic risk profiles. *Sci Rep.* 2023 Jul 15;13(1):11454. <https://doi.org/10.1038/s41598-023-38344-x>. PMID: 37454148
- Virtanen JK, Hantunen S, Lamberg-Allardt C, et al. The effect of vitamin D3 supplementation on atrial fibrillation in generally healthy men and women: The Finnish Vitamin D Trial. *Am Heart J.* 2023 Jun 10:S0002-8703(23)00143-6. <https://doi.org/10.1016/j.ahj.2023.05.024>. Online ahead of print. PMID: 37302737
- Wang L, Wang X, Sun M, et al. Oral health and 10-year cardiovascular risk in US adults: mediating role of inflammatory diet and vitamin D. *Clin Oral Investig.* 2023 Jul;27(7):3405-3413. <https://doi.org/10.1007/s00784-023-05097-w>. Epub 2023 Jun 5. PMID: 37273020
- Wu Z, Hu H, Wang C, et al. Sleep Patterns Modify the Association between Vitamin D Status and Coronary Heart Disease: Results from NHANES 2005-2008. *J Nutr.* 2023 May;153(5):1398-1406. <https://doi.org/10.1016/j.tjnut.2022.11.028>. Epub 2023 Feb 28. PMID: 36863481
- Yoshida K, Mizukami T, Fukagawa M, et al. Effect of vitamin D receptor activators on cardiovascular events in patients on hemodialysis-A post hoc analysis of the LANDMARK study. *Ther Apher Dial.* 2023 Jun;27(3):523-529. <https://doi.org/10.1111/1744-9987.13954>. Epub 2022 Dec 7. PMID: 36446713
- Zhang C, Zhu Z. Letter to the editor regarding, "Associations among vitamin D, tobacco smoke, and hypertension: a cross-sectional study of the NHANES 2001-2016" by Wu et al. *Hypertens Res.* 2023 Jun;46(6):1615. <https://doi.org/10.1038/s41440-023-01254-6>. Epub 2023 Mar 27. PMID: 36973370
- Zhang X, Sun W, Li N, et al. Causality assessment of circulating Vitamin D level on venous thromboembolism: A Mendelian randomization study. *Nutr Metab Cardiovasc Dis.* 2023 Sep;33(9):1800-1807. <https://doi.org/10.1016/j.numecd.2023.05.019>. Epub 2023 May 19. PMID: 37414665
- affected Iraqi Patients. *Cell Mol Biol (Noisy-le-grand).* 2023 May 31;69(5):26-31. <https://doi.org/10.14715/cmb/2023.69.5.5>. PMID: 37571904
- Al-Mohammedawi AKK, Anvari E, Fateh A. Relationship between CDX2 rs11568820 and EcoRV rs4516035 polymorphisms on the vitamin D receptor gene with susceptibility to different SARS-CoV-2 variants. *Cell Biol Int.* 2023 Jun 27. <https://doi.org/10.1002/cbin.12064>. Online ahead of print. PMID: 37369952
- Azmi A, Rismani M, Pourmontaseri H, et al. The role of vitamin D receptor and IL-6 in COVID-19. *Mol Genet Genomic Med.* 2023 Jul;11(7):e2172. <https://doi.org/10.1002/mgg3.2172>. Epub 2023 Apr 6. PMID: 37025056
- Bajpai R. Methodological issues in designing and reporting of systematic reviews in assessing association between vitamin D supplementation and COVID-19 severity. *QJM.* 2023 May 27;116(5):406-407. <https://doi.org/10.1093/qjmed/hcac179>. PMID: 35861421
- Bayrak H, Öztürk D, Bolat A, et al. Association Between Vitamin D Levels and COVID-19 Infection in Children: A Case-Control Study. *Türk Arch Pediatr.* 2023 May;58(3):250-255. <https://doi.org/10.5152/TurkArch-Pediatr.2023.22217>. PMID: 37017281
- Beheshti M, Neisi N, Parsanahad M, et al. Correlation of vitamin D levels with serum parameters in Covid-19 patients. *Clin Nutr ESPEN.* 2023 Jun;55:325-331. <https://doi.org/10.1016/j.clnesp.2023.04.012>. Epub 2023 Apr 19. PMID: 37202065
- Bikle DD. Vitamin D and Long Covid: Is there a role in prevention or treatment? *J Clin Endocrinol Metab.* 2023 Jun 6:dgad338. <https://doi.org/10.1210/clinem/dgad338>. Online ahead of print. PMID: 37279939
- Charkowick SV, Logothetis CN, Tsay K, et al. A Retrospective Analysis of Vitamin D Levels in Hospitalized COVID-19 Patients With Suspected Pulmonary Embolism. *Cureus.* 2023 Jul 13;15(7):e41805. <https://doi.org/10.7759/cureus.41805>. eCollection 2023 Jul. PMID: 37575807
- Cusato J, Manca A, Palermi A, et al. COVID-19: Focusing on the Link between Inflammation, Vitamin D, MAPK Pathway and Oxidative Stress Genetics. *Antioxidants (Ba-*

CORONAVIRUS DISEASE

- Abdulameer NA, Eleroui M, Nasser HH, et al. The Vitamin D Binding Protein Gene Polymorphism Association with Covid-19-In-

- sell). 2023 May 20;12(5):1133. <https://doi.org/10.3390/antiox12051133>. PMID: 37237997
- Cutolo M, Smith V, Paolino S, et al. Involvement of the secosteroid vitamin D in autoimmune rheumatic diseases and COVID-19. *Nat Rev Rheumatol*. 2023 May;19(5):265-287. <https://doi.org/10.1038/s41584-023-00944-2>. Epub 2023 Mar 28. PMID: 36977791
 - di Filippo L, Frara S, Giustina A. Response to the Letter to the Editor from Min et al.: Low vitamin D levels are associated with Long COVID syndrome in COVID-19 survivors. *J Clin Endocrinol Metab*. 2023 Jun 12:dgad327. <https://doi.org/10.1210/clinem/dgad327>. Online ahead of print. PMID: 37307214
 - di Filippo L, Uygur M, Locatelli M, et al. Low vitamin D levels predict outcomes of COVID-19 in patients with both severe and non-severe disease at hospitalization. *Endocrine*. 2023 Jun;80(3):669-683. <https://doi.org/10.1007/s12020-023-03331-9>. Epub 2023 Mar 1. PMID: 36854858
 - Ducharme FM, Tremblay C, Golchi S, et al. Prevention of COVID-19 with oral vitamin D supplemental therapy in essential healthcare teams (PROTECT): protocol for a multicentre, triple-blind, randomised, placebo-controlled trial. *BMJ Open*. 2023 May 25;13(5):e064058. <https://doi.org/10.1136/bmjopen-2022-064058>. PMID: 37230524
 - Ekemen Keleş Y, Yılmaz D, Taşar S, et al. Can Serum 25-Hydroxy Vitamin D Levels Predict the Severity of Multisystem Inflammatory Syndrome in Children and COVID-19? *J Clin Res Pediatr Endocrinol*. 2023 May 29;15(2):190-198. <https://doi.org/10.4274/jcrpe.galenos.2023.2022-10-1>. Epub 2023 Feb 16. PMID: 36794864
 - Feentved Ødum SL, Kongsbak-Wismann M. Vitamin D and SARS-CoV-2. *Basic Clin Pharmacol Toxicol*. 2023 Jul;133(1):6-15. <https://doi.org/10.1111/bcpt.13872>. Epub 2023 Apr 17. PMID: 37038047
 - Jalavu TP, Sigwadhi LN, Kotze MJ, et al. An investigation of the correlation of vitamin D status and management outcomes in patients with severe COVID-19 at a South African tertiary hospital. *IJID Reg*. 2023 Jun 1. <https://doi.org/10.1016/j.ijregi.2023.05.007>. Online ahead of print. PMID: 37363198
 - Kapoor N, Kalra S. Coronavirus disease 2019 and vitamin D. *Best Pract Res Clin Endocrinol Metab*. 2023 Jul;37(4):101791. <https://doi.org/10.1016/j.beem.2023.101791>. Epub 2023 Jun 19. PMID: 37394290
 - Karampinis E, Goudouras G, Ntavari N, et al. Serum vitamin D levels can be predictive of psoriasis flares up after COVID-19 vaccination: a retrospective case control study. *Front Med (Lausanne)*. 2023 May 25;10:1203426. <https://doi.org/10.3389/fmed.2023.1203426>. eCollection 2023. PMID: 37305120
 - Liu Y, Clare S, D'Erasmus G, et al. Vitamin D and SARS-CoV-2 Infection: SERVE Study (SARS-CoV-2 Exposure and the Role of Vitamin D among Hospital Employees). *J Nutr*. 2023 May;153(5):1420-1426. <https://doi.org/10.1016/j.tjnut.2023.03.001>. Epub 2023 Mar 5. PMID: 36871833
 - Manojlovic M, Ilincic B, Naglic DT, et al. Association between vitamin D hypovitaminosis and severe forms of COVID-19. *Eur Rev Med Pharmacol Sci*. 2023 Jun;27(11):5318-5326. https://doi.org/10.26355/eur-rev_202306_32651. PMID: 37318506
 - Martineau AR. Vitamin D in the prevention or treatment of COVID-19. *Proc Nutr Soc*. 2023 May;82(2):200-207. <https://doi.org/10.1017/S0029665122002798>. Epub 2022 Nov 11. PMID: 36366796
 - Min Y, Wei X, Peng X. Letter to the editor from Min et al.: Low vitamin D levels are associated with Long COVID syndrome in COVID-19 survivors. *J Clin Endocrinol Metab*. 2023 Jun 12:dgad325. <https://doi.org/10.1210/clinem/dgad325>. Online ahead of print. PMID: 37307567
 - Mingiano C, Picchioni T, Cavati G, et al. Vitamin D Deficiency in COVID-19 Patients and Role of Calcifediol Supplementation. *Nutrients*. 2023 Jul 30;15(15):3392. <https://doi.org/10.3390/nu15153392>. PMID: 37571329
 - Moghaddam RR, Khorasanchi Z, Noor AR, et al. High-dose vitamin D supplementation is related to an improvement in serum alkaline phosphatase in COVID-19 patients; a randomized double-blinded clinical trial. *J Health Popul Nutr*. 2023 Jul 25;42(1):71. <https://doi.org/10.1186/s41043-023-00409-y>. PMID: 37491318
 - Moukayed M. A Narrative Review on the Potential Role of Vitamin D3 in the Prevention, Protection, and Disease Mitigation of Acute and Long COVID-19. *Curr Nutr Rep*. 2023 Jun;12(2):215-223. <https://doi.org/10.1007/s13668-023-00471-2>. Epub 2023 May 5. PMID: 37145350
 - Novakovic V, Benfield T, Jørgensen HL, et al. Vitamin D as a prognostic biomarker in COVID-19: single-center study and meta-analyses. *Scand J Clin Lab Invest*. 2023 May;83(3):173-182. <https://doi.org/10.1080/00365513.2023.2191333>. Epub 2023 Apr 17. PMID: 37067370
 - Partap U, Sharma KK, Marathe Y, et al. Vitamin D and Zinc Supplementation to Improve Treatment Outcomes among COVID-19 Patients in India: Results from a Double-Blind Randomized Placebo-Controlled Trial. *Curr Dev Nutr*. 2023 Jul 11;7(8):101971. <https://doi.org/10.1016/j.cdnut.2023.101971>. eCollection 2023 Aug. PMID: 37560461
 - Pludowski P. COVID-19 and Other Pleiotropic Actions of Vitamin D: Proceedings from the Fifth International Conference "Vitamin D-Minimum, Maximum, Optimum" under the Auspices of the European Vitamin D Association (EVIDAS). *Nutrients*. 2023 May 29;15(11):2530. <https://doi.org/10.3390/nu15112530>. PMID: 37299493
 - Qiu S, Zheng K, Hu Y, et al. Genetic correlation, causal relationship, and shared loci between vitamin D and COVID-19: A genome-wide cross-trait analysis. *J Med Virol*. 2023 May;95(5):e28780. <https://doi.org/10.1002/jmv.28780>. PMID: 37212302
 - Russo C, Valle MS, Malaguarnera L, et al. Comparison of Vitamin D and Resveratrol Performances in COVID-19. *Nutrients*. 2023 Jun 5;15(11):2639. <https://doi.org/10.3390/nu15112639>. PMID: 37299603
 - Sanecka M, Youssef M, Abdulsalam M, et al. Hospital Outcomes in Patients Hospitalized for COVID-19 Pneumonia: The Effect of SARS-CoV-2 Vaccination and Vitamin D Status. *Nutrients*. 2023 Jun 30;15(13):2976. <https://doi.org/10.3390/nu15132976>. PMID: 37447302
 - Shah K, Punnapuzha V, Sharma U, et al. Response to: Methodological issues in designing and reporting of systematic reviews in assessing association between vitamin D supplementation and COVID-19

- severity. *QJM*. 2023 May 27;116(5):408-409. <https://doi.org/10.1093/qjmed/hcac178>. PMID: 35861424
- Shah K, Varna VP, Sharma U, et al. Response to: A statistical commentary on 'Does vitamin D supplementation reduces COVID-19 severity? A systematic review'. *QJM*. 2023 Jul 28;116(7):611-612. <https://doi.org/10.1093/qjmed/hcad046>. PMID: 36971583
 - Shahini E, Pesce F, Argentiero A, et al. Corrigendum: Can vitamin D status influence seroconversion to SARS-CoV-2 vaccines? *Front Immunol*. 2023 May 3;14:1210147. <https://doi.org/10.3389/fimmu.2023.1210147>. eCollection 2023. PMID: 37207235
 - Szarpak L, Feduniw S, Pruc M, et al. The Vitamin D Serum Levels in Pregnant Women Affected by COVID-19: A Systematic Review and Meta-Analysis. *Nutrients*. 2023 May 31;15(11):2588. <https://doi.org/10.3390/nu15112588>. PMID: 37299555
 - Yigit S, Tural S, Aci R, et al. Vascular endothelial growth factor gene insertion/deletion polymorphism is associated with Vitamin D level in Turkish patients with coronavirus disease 2019. *Rev Assoc Med Bras* (1992). 2023 Jul 17;69(7):e20221713. <https://doi.org/10.1590/1806-9282.20221713>. eCollection 2023. PMID: 37466590
 - Zhou S, Hu H. A statistical commentary on 'Does vitamin D supplementation reduce COVID-19 severity? A systematic review'. *QJM*. 2023 Jul 28;116(7):609-610. <https://doi.org/10.1093/qjmed/hcad045>. PMID: 36971605
 - Zúñiga González M, Roco-Videla Á. [Hip fracture in older adults during pandemic and vitamin D effect]. *Nutr Hosp*. 2023 Jun 13. <https://doi.org/10.20960/nh.04688>. Online ahead of print. PMID: 37334788
- ## DERMATOLOGY
- [No authors listed] Erratum: Serum vitamin D and antinuclear antibody level in oral lichen planus patients: A cross-sectional study: Erratum. *Ann Med Surg* (Lond). 2023 Jun 21;85(6):3252. <https://doi.org/10.1097/MS9.0000000000001026>. eCollection 2023 Jun. PMID: 37363591
 - AbdElneam AI, Al-Dhubaibi MS, Bahaj SS, et al. The vitamin D receptor gene polymorphism rs1544410 T/T genotype as a predictor of factor vitamin D thresholds deficiency in patients with psoriasis vulgaris-A preliminary study. *J Cosmet Dermatol*. 2023 May;22(5):1642-1646. <https://doi.org/10.1111/jocd.15625>. Epub 2023 Jan 31. PMID: 36718826
 - Akbaş A, Kılınç F, Şener S, et al. Vitamin D levels in patients with seborrheic dermatitis. *Rev Assoc Med Bras* (1992). 2023 Jul 17;69(7):e20230022. <https://doi.org/10.1590/1806-9282.20230022>. eCollection 2023. PMID: 37466593
 - Alsenaid A, Al-Dhubaibi MS, Alhetheli G, et al. Trichoscopy pattern and evaluation of serum vitamin D status in alopecia areata. *Photodiagnosis Photodyn Ther*. 2023 Jun;42:103510. <https://doi.org/10.1016/j.pdpdt.2023.103510>. Epub 2023 Mar 20. PMID: 36944416
 - Bohmann P, Stein MJ, Konzok J, et al. Relationship between genetically proxied vitamin D and psoriasis risk: a Mendelian randomization study. *Clin Exp Dermatol*. 2023 Jun 5;48(6):642-647. <https://doi.org/10.1093/ced/llad095>. PMID: 36899474
 - Elmelid A, Siekleri Vandikas M, et al. The Effect of Narrow-Band Ultraviolet B Phototherapy on Free and Total Vitamin D Serum Levels in Mild to Severe Plaque Psoriasis. *Biomolecules*. 2023 Jun 21;13(7):1018. <https://doi.org/10.3390/biom13071018>. PMID: 37509054
 - Formisano E, Proietti E, Borgarelli C, et al. Psoriasis and Vitamin D: A Systematic Review and Meta-Analysis. *Nutrients*. 2023 Jul 30;15(15):3387. <https://doi.org/10.3390/nu15153387>. PMID: 37571324
 - Garza-Davila VF, Valdespino-Valdes J, Ramos A, et al. Combination of NB-UVB phototherapy and oral vitamin D supplementation in patients with generalized vitiligo: A randomized, triple-blind, placebo-controlled clinical trial. *J Eur Acad Dermatol Venereol*. 2023 Jul 17. <https://doi.org/10.1111/jdv.19347>. Online ahead of print. PMID: 37458536
 - Hahn JM, Combs KA, Powell HM, et al. A role for vitamin D and the vitamin D receptor in keloid disorder. *Wound Repair Regen*. 2023 Jul 17. <https://doi.org/10.1111/wrr.13109>. Online ahead of print. PMID: 37458255
 - Iqbal T, Asim SA, Bhatti S, et al. Association of Vitamin D with Moderate to Severe Acne Vulgaris. *J Coll Physicians Surg Pak*. 2023 May;33(5):527-530. <https://doi.org/10.29271/jcpsp.2023.05.527>. PMID: 37190686
 - Jenssen M, Furberg AS, Jorde R, et al. Effect of Vitamin D Supplementation on Psoriasis Severity in Patients With Lower-Range Serum 25-Hydroxyvitamin D Levels: A Randomized Clinical Trial. *JAMA Dermatol*. 2023 May 1;159(5):518-525. <https://doi.org/10.1001/jamadermatol.2023.0357>. PMID: 36988936
 - Karampinis E, Aloizou AM, Zafiriou E, et al. Non-Melanoma Skin Cancer and Vitamin D: The "Lost Sunlight" Paradox and the Oxidative Stress Explanation. *Antioxidants* (Basel). 2023 May 17;12(5):1107. <https://doi.org/10.3390/antiox12051107>. PMID: 37237973
 - Lu R, Peng Z, Lian P, et al. Vitamin D attenuates DNCB-induced atopic dermatitis-like skin lesions by inhibiting immune response and restoring skin barrier function. *Int Immunopharmacol*. 2023 Jun 30;122:110588. <https://doi.org/10.1016/j.intimp.2023.110588>. Online ahead of print. PMID: 37393836
 - Nabavizadeh SH, Alyasin S, Esmaeilzadeh H, et al. The effect of vitamin D add-on therapy on the improvement of quality of life and clinical symptoms of patients with chronic spontaneous urticaria. *Asian Pac J Allergy Immunol*. 2023 Jun;41(2):150-157. <https://doi.org/10.12932/APJ021219-0705>. PMID: 32828116
 - Naushad A, Aziz NI. Vitamin D in Keloids: An alternative to steroids? *J Pak Med Assoc*. 2023 Jul;73(7):1571. <https://doi.org/10.47391/JPMA.8429>. PMID: 37469095
 - Ocanha Xavier JP, Xavier JCC Jr, da Silva MG, et al. Vitamin D Receptor and Retinoid X Receptor Alpha in Melanocytic Benign Lesions and Melanoma. *Am J Dermatopathol*. 2023 Jul 28. <https://doi.org/10.1097/DAD.0000000000002507>. Online ahead of print. PMID: 37506276
 - Salem DA, Alghamdi MA, Al-Ghamdi HS, et al. Vitamin D status, vitamin D receptor gene polymorphism, and haplotype in patients with cutaneous leishmaniasis: Correlation with susceptibility and parasite load index. *PLoS Negl Trop Dis*. 2023 Jun 15;17(6):e0011393. <https://doi.org/10.1371/journal.pntd.1011393>

org/10.1371/journal.pntd.0011393. eCollection 2023 Jun. PMID: 37319132

- Salem MW, Adel Abd El Azim A, Galal SA. Efficacy of topical vitamin D combined with microneedling in the treatment of vitiligo: A comparative study. *J Cosmet Dermatol*. 2023 May;22(5):1521-1527. <https://doi.org/10.1111/jocd.15621>. Epub 2023 Jan 31. PMID: 36718834
- Schmidt AD, Miciano C, Zheng Q, et al. Involucrin Modulates Vitamin D Receptor Activity in the Epidermis. *J Invest Dermatol*. 2023 Jun;143(6):1052-1061.e3. <https://doi.org/10.1016/j.jid.2022.12.009>. Epub 2023 Jan 13. PMID: 36642403
- Shafiq AB, Chowdhury MR, Huda MF, et al. Association of Serum Vitamin D Concentration with the Severity of Patients with Atopic Dermatitis. *Mymensingh Med J*. 2023 Jul;32(3):666-670. PMID: 37391957

ENDOCRINOLOGY

- Al Kiyumi M. Letter to the editor: Vitamin D levels and diabetic foot ulcers: Is there an association? *Int Wound J*. 2023 May 14. <https://doi.org/10.1111/iwj.14234>. Online ahead of print. PMID: 37182842
- AlSedairy SA, AlHarbi LN, Binobead MA, et al. Association of CYP2R1 and CYP27B1 genes with the risk of obesity and vitamin D metabolism in Saudi women. *J Genet Eng Biotechnol*. 2023 May 15;21(1):59. <https://doi.org/10.1186/s43141-023-00508-7>. PMID: 37184736
- Bustamante VH, Estrada A, Merchant N. Characteristics of vitamin D deficiency hypocalcemia inpatient admissions at a single tertiary center. *J Pediatr Endocrinol Metab*. 2023 Jul 13;36(8):749-752. <https://doi.org/10.1515/jpem-2023-0201>. Print 2023 Aug 28. PMID: 37436141
- Cereijo C, Hooper P, Patel R, et al. Effectiveness of three Vitamin D dosing protocols on raising and maintaining blood serum levels of 25-hydroxyvitamin D over a three-month period: a randomized, prospective study. *Eur J Orthop Surg Traumatol*. 2023 May;33(4):1201-1207. <https://doi.org/10.1007/s00590-022-03272-5>. Epub 2022 May 10. PMID: 35538377
- Chen T, Xing X, Huang L, et al. Efficacy and safety of high-dose intramuscular vitamin D2 injection in type 2 diabetes mellitus with distal symmetric polyneuropathy combined with vitamin D insufficiency: study protocol for a multicenter, randomized, double-blinded, and placebo-controlled trial. *Front Endocrinol (Lausanne)*. 2023 Jul 7;14:1202917. <https://doi.org/10.3389/fendo.2023.1202917>. eCollection 2023. PMID: 37484958
- Corbin KD, Pittas AG, Desouza C, et al. Indices of hepatic steatosis and fibrosis in prediabetes and association with diabetes development in the vitamin D and type 2 diabetes study. *J Diabetes Complications*. 2023 Jun;37(6):108475. <https://doi.org/10.1016/j.jdiacomp.2023.108475>. Epub 2023 Apr 12. PMID: 37104979
- D AD, Suran A, Maldar AN, et al. Differences in the Clinical Presentation and Biochemical Profile of the Patients with Primary Hyperparathyroidism with regard to their Serum Vitamin D Levels: a Single-center Experience. *Indian J Surg Oncol*. 2023 Jun;14(2):301-307. <https://doi.org/10.1007/s13193-022-01676-7>. Epub 2022 Oct 29. PMID: 37324304
- da Silva AD, Oliveira JS, de Castro IC, et al. Association of vitamin D and cognition in people with type 2 diabetes: a systematic review. *Nutr Rev*. 2023 Jul 4;nuad085. <https://doi.org/10.1093/nutrit/nuad085>. Online ahead of print. PMID: 37403328
- Danese VC, Pepe J, Ferrone F, et al. The Mutual Interplay between Bone, Glucose and Lipid Metabolism: The Role of Vitamin D and PTH. *Nutrients*. 2023 Jun 30;15(13):2998. <https://doi.org/10.3390/nu15132998>. PMID: 37447323
- Dosi MCMC, McGorum BC, Kirton RD, et al. The effect of season, management and endocrinopathies on vitamin D status in horses. *Equine Vet J*. 2023 Jul;55(4):672-680. <https://doi.org/10.1111/evj.13873>. Epub 2022 Sep 2. PMID: 36054781
- Etemadi F, Tabatabaei Naeini A, Aminlari M. Assessment of calcium, phosphorus, magnesium, vitamin D and PTH levels in sera of lame horses. *Vet Med Sci*. 2023 Jul 19. <https://doi.org/10.1002/vms3.1198>. Online ahead of print. PMID: 37466035
- Fronczek M, Osadnik T, Banach M. Impact of vitamin D receptor polymorphisms in selected metabolic disorders. *Curr Opin Clin Nutr Metab Care*. 2023 Jul 1;26(4):316-322. <https://doi.org/10.1097/MCO.0000000000000945>. Epub 2023 May 19. PMID: 37144463
- Gou Z, Li F, Qiao F, et al. Causal associations between insulin-like growth factor 1 and vitamin D levels: a two-sample bidirectional Mendelian randomization study. *Front Nutr*. 2023 May 17;10:1162442. <https://doi.org/10.3389/fnut.2023.1162442>. eCollection 2023. PMID: 37266131
- Grove-Laugesen D, Ebbeløj E, Watt T, et al. Effect of Vitamin D Supplementation on Graves' Disease: The DAGMAR Trial. *Thyroid*. 2023 Jun 26. <https://doi.org/10.1089/thy.2023.0111>. Online ahead of print. PMID: 37218433
- Gu X, Zhang D, Gao Z, et al. Correlations of polymorphisms of vitamin D receptor genes Apal and BsmI with diabetic retinopathy. *Panminerva Med*. 2023 Jun;65(2):275-277. <https://doi.org/10.23736/S0031-0808.21.04365-2>. Epub 2021 May 28. PMID: 34047520
- Gverović Antunica A, Znaor L, Ivanković M, et al. Vitamin D and Diabetic Retinopathy. *Int J Mol Sci*. 2023 Jul 27;24(15):12014. <https://doi.org/10.3390/ijms241512014>. PMID: 37569392
- Hammad R, Abdel Wahab MA, Farouk N, et al. Non-classical monocytes frequency and serum vitamin D3 levels are linked to diabetic foot ulcer associated with peripheral artery disease. *J Diabetes Investig*. 2023 Jul 2. <https://doi.org/10.1111/jdi.14048>. Online ahead of print. PMID: 37394883
- Hands JM, Corr PG, Frame LA. Clarifying the Heterogeneity in Response to Vitamin D in the Development, Prevention, and Treatment of Type 2 Diabetes Mellitus: A Narrative Review. *Int J Environ Res Public Health*. 2023 Jun 20;20(12):6187. <https://doi.org/10.3390/ijerph20126187>. PMID: 37372772
- Hsia DS, Nelson J, Vickery EM, et al. Effect of vitamin D on regression to normal glucose regulation and individual glycemic measures: A secondary analysis among participants adherent to the trial protocol in the randomized clinical trial vitamin D and type 2 diabetes (D2d) study. *Diabetes Res Clin Pract*. 2023 Aug;202:110792. <https://doi.org/10.1016/j.diabres.2023.110792>. Epub 2023 Jun 19. PMID: 37343726
- Huang W, Gu L, Wang J, et al. Causal association between vitamin D and diabetic neuropathy: a Mendelian randomization analysis. *Endocrine*. 2023 May;80(2):328-335. <https://doi.org/10.1007/s12005-023-01000-0>. PMID: 37218433

- org/10.1007/s12020-023-03315-9. Epub 2023 Feb 9. PMID: 36754931
- Ilyicheva EA, Shurygina IA, Dremina NN, et al. [The role of calcium sensitive and vitamin D receptors in the pathogenesis of sporadic multiple parathyroid gland disease]. *Probl Endokrinol (Mosk)*. 2023 Jun 30;69(3):24-34. <https://doi.org/10.14341/probl13207>. PMID: 37448244
 - Jayedi A, Daneshvar M, Jibril AT, et al. Serum 25(OH)D Concentration, Vitamin D Supplementation, and Risk of Cardiovascular Disease and Mortality in Patients with Type 2 Diabetes or Prediabetes: a Systematic Review and Dose-Response Meta-Analysis. *Am J Clin Nutr*. 2023 Jul 18:S0002-9165(23)66056-3. <https://doi.org/10.1016/j.ajcnut.2023.07.012>. Online ahead of print. PMID: 37467897
 - Kaličanin D, Cvek M, Barić A, et al. Associations between vitamin D levels and dietary patterns in patients with Hashimoto's thyroiditis. *Front Nutr*. 2023 May 5;10:1188612. <https://doi.org/10.3389/fnut.2023.1188612>. eCollection 2023. PMID: 37215216
 - Karras SN, Koufakis T, Dimakopoulos G, et al. Down regulation of the inverse relationship between parathyroid hormone and irisin in male vitamin D-sufficient HIV patients. *J Endocrinol Invest*. 2023 May 28. <https://doi.org/10.1007/s40618-023-02112-5>. Online ahead of print. PMID: 37245160
 - Kells MR, Roske C, Watters A, et al. Vitamin D and Hypophosphatemia in Patients with Anorexia Nervosa and Avoidant/Restrictive Food Intake Disorder: A Case Control Study. *Res Sq*. 2023 Jul 17:rs.3.rs-3101384. <https://doi.org/10.21203/rs.3.rs-3101384/v1>. Preprint. PMID: 37503154
 - Khaledi K, Hoseini R, Gharzi A. Effects of aerobic training and vitamin D supplementation on glycemic indices and adipose tissue gene expression in type 2 diabetic rats. *Sci Rep*. 2023 Jun 23;13(1):10218. <https://doi.org/10.1038/s41598-023-37489-z>. PMID: 37353689
 - Krisnamurti DGB, Louisa M, Poerwaningsih EH, et al. Vitamin D supplementation alleviates insulin resistance in prediabetic rats by modifying IRS-1 and PPAR γ /NF- κ B expressions. *Front Endocrinol (Lausanne)*. 2023 May 31;14:1089298. <https://doi.org/10.3389/fen->
 - do.2023.1089298. eCollection 2023. PMID: 37324274
 - Krysiak R, Kowalcze K, Szkróbka W, et al. Sexual Function and Depressive Symptoms in Young Women with Euthyroid Hashimoto's Thyroiditis Receiving Vitamin D, Selenomethionine and Myo-Inositol: A Pilot Study. *Nutrients*. 2023 Jun 20;15(12):2815. <https://doi.org/10.3390/nu15122815>. PMID: 37375719
 - Krysiak R, Kowalcze K, Szkróbka W, et al. Vitamin D Status Determines the Impact of Metformin on Gonadotropin Levels in Postmenopausal Women. *J Clin Med*. 2023 May 27;12(11):3715. <https://doi.org/10.3390/jcm12113715>. PMID: 37297909
 - Kwiendacz H, Nabrdalik K, Wijata AM, et al. Relationship of vitamin D deficiency with cardiovascular disease and glycemic control in patients with type 2 diabetes mellitus: the Silesia Diabetes-Heart Project. *Pol Arch Intern Med*. 2023 Jun 23;133(6):16445. <https://doi.org/10.20452/pamw.16445>. Epub 2023 Feb 27. PMID: 36856666
 - Lau D. In prediabetes, oral vitamin D reduces progression to new-onset diabetes. *Ann Intern Med*. 2023 May;176(5):JC55. <https://doi.org/10.7326/J23-0030>. Epub 2023 May 2. PMID: 37126809
 - Lebiedziński F, Lisowska KA. Impact of Vitamin D on Immunopathology of Hashimoto's Thyroiditis: From Theory to Practice. *Nutrients*. 2023 Jul 17;15(14):3174. <https://doi.org/10.3390/nu15143174>. PMID: 37513592
 - Lei F, Ni J, Hu JL, et al. Different doses of vitamin D supplementation to nonsurgical treatment for vitamin-D-insufficient patients with diabetic periodontitis and the effect on gingival BMP-2 levels. *Kaohsiung J Med Sci*. 2023 Jul 3. <https://doi.org/10.1002/kjm2.12726>. Online ahead of print. PMID: 37395326
 - Lei X, Zhou Q, Wang Y, et al. Serum and supplemental vitamin D levels and insulin resistance in T2DM populations: a meta-analysis and systematic review. *Sci Rep*. 2023 Jul 31;13(1):12343. <https://doi.org/10.1038/s41598-023-39469-9>. PMID: 37524765
 - Li X, Kou S, Chen G, et al. The relationship between vitamin D deficiency and diabetic foot ulcer: A meta-analysis. *Int Wound J*. 2023 May 16. <https://doi.org/10.1111/iwj.14177>. Online ahead of print. PMID: 37194326
 - Liu J, Liu J, Zhang J, et al. Vitamin D deficiency in early life regulates gut microbiome composition and leads to impaired glucose tolerance in adult and offspring rats. *Food Funct*. 2023 Jun 19;14(12):5768-5786. <https://doi.org/10.1039/d3fo00503h>. PMID: 37285306
 - Manero-Azua Á, Pereda A, González Cabrera N, et al. Vitamin D deficiency in adulthood: Presentation of 2 familial cases simulating pseudohypoparathyroidism. *Med Clin (Barc)*. 2023 Jul 25:S0025-7753(23)00369-X. <https://doi.org/10.1016/j.medcli.2023.06.009>. Online ahead of print. PMID: 37500374
 - Md Isa Z, Amsah N, Ahmad N. The Impact of Vitamin D Deficiency and Insufficiency on the Outcome of Type 2 Diabetes Mellitus Patients: A Systematic Review. *Nutrients*. 2023 May 15;15(10):2310. <https://doi.org/10.3390/nu15102310>. PMID: 37242192
 - Mohater S, Qahtan S, Alrefaie Z, et al. Vitamin D improves hepatic alterations in ACE1 and ACE2 expression in experimentally induced metabolic syndrome. *Saudi Pharm J*. 2023 Sep;31(9):101709. <https://doi.org/10.1016/j.jsps.2023.101709>. Epub 2023 Jul 26. PMID: 37559868
 - Obert P, Nottin S, Philouze C, et al. Major impact of vitamin D3 deficiency and supplementation on left ventricular torsional mechanics during dobutamine stress in uncomplicated type 2 diabetes. *Nutr Metab Cardiovasc Dis*. 2023 Jun 24:S0939-4753(23)00250-8. <https://doi.org/10.1016/j.numecd.2023.06.017>. Online ahead of print. PMID: 37543521
 - Oh J, Riek AE, Bauerle KT, et al. Embryonic vitamin D deficiency programs hematopoietic stem cells to induce type 2 diabetes. *Nat Commun*. 2023 Jun 13;14(1):3278. <https://doi.org/10.1038/s41467-023-38849-z>. PMID: 37311757
 - Pang C, Yu H, Cai Y, et al. Vitamin D and diabetic peripheral neuropathy: A multi-centre nerve conduction study among Chinese patients with type 2 diabetes. *Diabetes Metab Res Rev*. 2023 Jun 20:e3679. <https://doi.org/10.1002/dmrr.3679>. Online ahead of print. PMID: 37337761
 - Quesada-Gomez JM, Bouillon R. Calcifediol

- Cornerstone of the Vitamin D Endocrine System. *Nutrients*. 2023 May 12;15(10):2290. <https://doi.org/10.3390/nu15102290>. PMID: 37242173
- Rattanamusik N, Uitrakul S, Charoenpiriya A. Vitamin D Levels in Patients with Active and Remission Graves' Disease. *Medicines (Basel)*. 2023 Jul 6;10(7):41. <https://doi.org/10.3390/medicines10070041>. PMID: 37505062
 - Silveira EA, Costa Silveira L, de Souza Cardoso CK, et al. Vitamin D in women with class II/III obesity: Findings from the DietBra trial. *Clin Nutr ESPEN*. 2023 Jun;55:83-89. <https://doi.org/10.1016/j.clnesp.2023.02.027>. Epub 2023 Mar 9. PMID: 37202088
 - Smotrys MA, Liu JZ, Street S, et al. Energetic homeostasis achieved through biophoton energy and accompanying medication treatment resulted in sustained levels of Thyroiditis-Hashimoto's, iron, vitamin D & vitamin B12. *Metabol Open*. 2023 May 29;18:100248. <https://doi.org/10.1016/j.metop.2023.100248>. eCollection 2023 Jun. PMID: 37303826
 - Stewart BZ, Mamonova T, Sneddon WB, et al. Scribble scrambles parathyroid hormone receptor interactions to regulate phosphate and vitamin D homeostasis. *Proc Natl Acad Sci U S A*. 2023 Jun 6;120(23):e2220851120. <https://doi.org/10.1073/pnas.2220851120>. Epub 2023 May 30. PMID: 37252981
 - Sun L, Lu J, Yao D, et al. Effect of DHCR7 for the co-occurrence of hypercholesterolemia and vitamin D deficiency in type 2 diabetes: Perspective of health prevention. *Prev Med*. 2023 Aug;173:107576. <https://doi.org/10.1016/j.ypmed.2023.107576>. Epub 2023 Jun 15. PMID: 37329988
 - Sun X, Yan T, Li Z, et al. Effects of Endurance Exercise and Vitamin D Supplementation on Insulin Resistance and Plasma Lipidome in Middle-Aged Adults with Type 2 Diabetes. *Nutrients*. 2023 Jul 3;15(13):3027. <https://doi.org/10.3390/nu15133027>. PMID: 37447353
 - Taloyan M, Steiner KH, Östenson CG, et al. Fasting plasma glucose and serum 25-hydroxy vitamin D levels in individuals with Middle Eastern and Swedish descent. *J Diabetes Metab Disord*. 2023 May 22;1-7. <https://doi.org/10.1007/s40200-023-01226-0>. Online ahead of print. PMID: 37363201
 - Verdoia M, De Luca G. Is there an actual link between vitamin D deficiency, cardiovascular disease, and glycemic control in patients with type 2 diabetes mellitus? *Pol Arch Intern Med*. 2023 Jun 23;133(6):16516. <https://doi.org/10.20452/pamw.16516>. Epub 2023 Jun 23. PMID: 37351588
 - Vetrani C, Barrea L, Verde L, et al. Vitamin D and chronotype: is there any relationship in individuals with obesity? *J Endocrinol Invest*. 2023 May;46(5):1001-1008. <https://doi.org/10.1007/s40618-022-01973-6>. Epub 2022 Dec 1. PMID: 36454438
 - Vijay GS, Ghonge S, Vajjala SM, et al. Prevalence of Vitamin D Deficiency in Type 2 Diabetes Mellitus Patients: A Cross-Sectional Study. *Cureus*. 2023 May 12;15(5):e38952. <https://doi.org/10.7759/cureus.38952>. eCollection 2023 May. PMID: 37313077
 - Vrysis C, Beneki E, Zintzaras E, et al. Assessment of the reporting quality of randomised controlled trials for vitamin D supplementation in autoimmune thyroid disorders based on the CONSORT statement. *Endocrine*. 2023 May;80(2):346-354. <https://doi.org/10.1007/s12020-022-03270-x>. Epub 2022 Dec 3. PMID: 36462148
 - Wang C, Li H, Huo L, et al. Serum 25-Hydroxyvitamin D Levels in Type 2 Diabetes Patients in North China: Seasonality and the Association between Vitamin D Status and Glycosylated Hemoglobin Levels. *Int J Clin Pract*. 2023 May 5;2023:4151224. <https://doi.org/10.1155/2023/4151224>. eCollection 2023. PMID: 37188155
 - Wee CL, Azemi AK, Mokhtar SS, et al. Vitamin D deficiency enhances vascular oxidative stress, inflammation, and angiotensin II levels in the microcirculation of diabetic patients. *Microvasc Res*. 2023 Jun 28;150:104574. <https://doi.org/10.1016/j.mvr.2023.104574>. Online ahead of print. PMID: 37390963
 - Yoon SH, Meyer MB, Arevalo C, et al. A parathyroid hormone/salt-inducible kinase signaling axis controls renal vitamin D activation and organismal calcium homeostasis. *J Clin Invest*. 2023 May 1;133(9):e163627. <https://doi.org/10.1172/JCI163627>. PMID: 36862513
 - Zhao ZM, Zhang CD. A commentary on 'Perioperative versus postoperative calcium and vitamin D supplementation to prevent symptomatic hypocalcemia after total thyroidectomy: a randomized placebo controlled trial'. *Int J Surg*. 2023 Jul 1;109(7):2133-2134. <https://doi.org/10.1097/JS9.0000000000000351>. PMID: 37288589

EPIDEMIOLOGY

- Abdelsalam M, Nagy E, Abdalbary M, et al. Prevalence and Associated Factors of Vitamin D Deficiency in High Altitude Region in Saudi Arabia: Three-Year Retrospective Study. *Int J Gen Med*. 2023 Jul 12;16:2961-2970. <https://doi.org/10.2147/IJGM.S418811>. eCollection 2023. PMID: 37485454
- Caso G, Grønhoj A, Vecchio R, et al. Senior citizens' vitamin D supplements intake: evidence from Denmark. *J Sci Food Agric*. 2023 May 6. <https://doi.org/10.1002/jsfa.12693>. Online ahead of print. PMID: 37148153
- Chailurkit IO, Ongphiphadhanakul B, Aekplakorn W. Update on vitamin D status in sunshine-abundant Thailand, 2019-2020. *Nutrition*. 2023 Jul 11;116:112161. <https://doi.org/10.1016/j.nut.2023.112161>. Online ahead of print. PMID: 37544190
- Díaz de León González E, Gutiérrez Hermosillo H, Morales Torres JLA. Serum vitamin D levels and mortality in Mexicans: results from the Mexican Health and Aging Study. *Nutr Hosp*. 2023 Jun 21. <https://doi.org/10.20960/nh.04580>. Online ahead of print. PMID: 37409711
- Feehan O, Magee PJ, Pourshahidi LK, et al. Vitamin D deficiency in nursing home residents: a systematic review. *Nutr Rev*. 2023 Jun 9;81(7):804-822. <https://doi.org/10.1093/nutrit/nuac091>. PMID: 36367832
- Hendi NN, Chakhtoura M, Al-Sarraj Y, et al. The Genetic Architecture of Vitamin D Deficiency among an Elderly Lebanese Middle Eastern Population: An Exome-Wide Association Study. *Nutrients*. 2023 Jul 20;15(14):3216. <https://doi.org/10.3390/nu15143216>. PMID: 37513634
- Henriques M, Rodrigues D, Viegas S, et al. Vitamin D status in active duty Navy military personnel: a systematic review. *Occup Environ Med*. 2023 Jun;80(6):353-360. <https://doi.org/10.1136/oemed-2022-108710>. Epub 2023 Apr 3. PMID: 37012046

- Kim KN, Lee JS, Shim JS, et al. Estimated dietary vitamin D intake and major vitamin D food sources of Koreans: based on the Korea National Health and Nutrition Examination Survey 2016-2019. *Nutr Res Pract.* 2023 Jun;17(3):451-463. <https://doi.org/10.4162/nrp.2023.17.3.451>. Epub 2022 Sep 14. PMID: 37266120
 - Kowalówka M, Kosewski G, Lipiński D, et al. A Comprehensive Look at the -13910 C>T LCT Gene Polymorphism as a Molecular Marker for Vitamin D and Calcium Levels in Young Adults in Central and Eastern Europe: A Preliminary Study. *Int J Mol Sci.* 2023 Jun 15;24(12):10191. <https://doi.org/10.3390/ijms241210191>. PMID: 37373338
 - Lee JK, Chee WS, Foo SH, et al. Vitamin D status and clinical implications in the adult population of Malaysia: a position paper by the Malaysian Vitamin D Special Interest Group. *Osteoporos Int.* 2023 Jul 11. <https://doi.org/10.1007/s00198-023-06841-4>. Online ahead of print. PMID: 37430004
 - Lee JK, Chee WSS, Foo SH, et al. Correction: Vitamin D status and clinical implications in the adult population of Malaysia: a position paper by the Malaysian Vitamin D Special Interest Group. *Osteoporos Int.* 2023 Jul 28. <https://doi.org/10.1007/s00198-023-06865-w>. Online ahead of print. PMID: 37505306
 - Liu X, Brock KE, Brennan-Speranza TC, et al. Healthy lifestyles are associated with better vitamin D status in community-dwelling older men: The Health In Men Study (HIMS). *Clin Endocrinol (Oxf).* 2023 Aug;99(2):165-173. <https://doi.org/10.1111/cen.14926>. Epub 2023 May 10. PMID: 37165475
 - Lovell P, Bullen K. Vitamin D levels in hospice in-patients. *BMJ Support Palliat Care.* 2023 Jun;13(2):244-246. <https://doi.org/10.1136/bmjspcare-2021-003113>. Epub 2021 Nov 15. PMID: 34782345
 - Nascimento LM, Lavôr LCC, Sousa PVL, et al. Consumption of ultra-processed products is associated with vitamin D deficiency in Brazilian adults and elderly. *Br J Nutr.* 2023 Jul 19:1-23. <https://doi.org/10.1017/S000711452300154X>. Online ahead of print. PMID: 37466032
 - Retamoso VR, Feijóo LB, Vasquez Rubio DA, et al. Black skin color but not VDR gene represent a risk factor for low serum levels of vitamin D in self-declared black individuals. *Clin Nutr ESPEN.* 2023 Jun;55:230-237. <https://doi.org/10.1016/j.clnesp.2023.03.016>. Epub 2023 Mar 28. PMID: 37202051
 - Scully H, McCarroll K, Healy M, et al. Vitamin D intake and status in Ireland: a narrative review. *Proc Nutr Soc.* 2023 May;82(2):157-171. <https://doi.org/10.1017/S0029665123002185>. Epub 2023 Feb 14. PMID: 37264891
 - Sridonpai P, Suthipibul P, Boonyingsathit K, et al. Vitamin D Content in Commonly Consumed Mushrooms in Thailand and Its True Retention after Household Cooking. *Foods.* 2023 May 25;12(11):2141. <https://doi.org/10.3390/foods12112141>. PMID: 37297386
 - Tripathy S, Negi S, Kumar D, et al. Prevalence of Vitamin-D deficiency and insufficiency among prisoners across the globe: A systematic review and meta-analysis. *J Forensic Leg Med.* 2023 Jul;97:102549. <https://doi.org/10.1016/j.jflm.2023.102549>. Epub 2023 Jun 16. PMID: 37348178
 - Vergara-Maldonado C, Urdaneta-Machado JR. The Effects of Latitude and Temperature Weather on Vitamin D Deficiency and Women's Reproductive Health: A Scoping Review. *J Midwifery Womens Health.* 2023 May;Jun;68(3):340-352. <https://doi.org/10.1111/jmwh.13516>. Epub 2023 May 31. PMID: 37255079 Review.
 - Wang TY, Wang HW, Jiang MY. Prevalence of vitamin D deficiency and associated risk of all-cause and cause-specific mortality among middle-aged and older adults in the United States. *Front Nutr.* 2023 May 18;10:1163737. <https://doi.org/10.3389/fnut.2023.1163737>. eCollection 2023. PMID: 37275650
- GASTROENTEROLOGY**
- Aggeletopoulou I, Marangos M, Assimakopoulos SF, et al. Vitamin D and Microbiome: Molecular Interaction in Inflammatory Bowel Disease Pathogenesis. *Am J Pathol.* 2023 Jun;193(6):656-668. <https://doi.org/10.1016/j.ajpath.2023.02.004>. Epub 2023 Mar 1. PMID: 36868465
 - Aggeletopoulou I, Tsounis EP, Mouzaki A, et al. Exploring the Role of Vitamin D and the Vitamin D Receptor in the Composition of the Gut Microbiota. *Front Biosci (Landmark Ed).* 2023 Jun 14;28(6):116. <https://doi.org/10.31083/j.fbl2806116>. PMID: 37395032
 - Al-Maweri SA, Al-Qadhi G, Halboub E, et al. Vitamin D deficiency and risk of recurrent aphthous stomatitis: updated meta-analysis with trial sequential analysis. *Front Nutr.* 2023 Jun 22;10:1132191. <https://doi.org/10.3389/fnut.2023.1132191>. eCollection 2023. PMID: 37426194
 - Álvarez-Delgado C, Ruedas-Torres I, Sánchez-Carvajal JM, et al. Impact of supplementation with dihydroxylated vitamin D3 on performance parameters and gut health in weaned Iberian piglets under indoor/outdoor conditions. *Porcine Health Manag.* 2023 Jun 15;9(1):15. <https://doi.org/10.1186/s40813-023-00307-z>. PMID: 37316951
 - Bartolini D, Zatini L, Migni A, et al. Transcriptomics of natural and synthetic vitamin D in human hepatocyte lipotoxicity. *J Nutr Biochem.* 2023 Jul;117:109319. <https://doi.org/10.1016/j.jnutbio.2023.109319>. Epub 2023 Mar 23. PMID: 36963728
 - Barut D, Akisu M, Koroglu OA, et al. The role of vitamin D receptor gene polymorphism in the development of necrotizing enterocolitis. *Pediatr Res.* 2023 Jul;94(1):275-279. <https://doi.org/10.1038/s41390-022-02426-9>. Epub 2023 Jan 3. PMID: 36596941
 - Boccuzzi L, Infante M, Ricordi C. The potential therapeutic role of vitamin D in inflammatory bowel disease. *Eur Rev Med Pharmacol Sci.* 2023 May;27(10):4678-4687. https://doi.org/10.26355/eurrev_202305_32479. PMID: 37259751
 - Bredenoord AJ. Eosinophilic esophagitis and the promise of vitamin D. *Gut.* 2023 May;72(5):812-813. <https://doi.org/10.1136/gutjnl-2022-328283>. Epub 2022 Sep 2. PMID: 37015752
 - Brusilovsky M, Rochman M, Shoda T, et al. Vitamin D receptor and STAT6 interactome governs oesophageal epithelial barrier responses to IL-13 signalling. *Gut.* 2023 May;72(5):834-845. <https://doi.org/10.1136/gutjnl-2022-327276>. Epub 2022 Aug 2. PMID: 35918104
 - Chanchlani N, Lin S, Smith R, et al. Pre-treatment Vitamin D Concentrations Do Not Predict Therapeutic Outcome to Anti-TNF Therapies in Biologic-Naïve Patients With Active Luminal Crohn's Disease. *Crohns*

- Colitis 360. 2023 May 15;5(3):otad026. <https://doi.org/10.1093/crocol/otad026>. eCollection 2023 Jul. PMID: 37265586
- Chiang CH, Chang YJ, He SR, et al. Association of 25(OH)-Vitamin D and metabolic factors with colorectal polyps. *PLoS One*. 2023 Jun 8;18(6):e0286654. <https://doi.org/10.1371/journal.pone.0286654>. eCollection 2023. PMID: 37289677
 - Ciardullo S, Muraca E, Cannistraci R, et al. Low 25 (OH) vitamin D levels are associated with increased prevalence of nonalcoholic fatty liver disease and significant liver fibrosis. *Diabetes Metab Res Rev*. 2023 Jul;39(5):e3628. <https://doi.org/10.1002/dmrr.3628>. Epub 2023 Mar 9. PMID: 36815587
 - Kohli A, Chawla A, Arora S, et al. Vitamin D Toxicity Masquerading as Acute Pancreatitis. *Cureus*. 2023 Jun 9;15(6):e40189. <https://doi.org/10.7759/cureus.40189>. eCollection 2023 Jun. PMID: 37304381
 - Lee D, Koo Y, Chae Y, et al. Serum 25-hydroxyvitamin D, vitamin D receptor, and vitamin D binding protein concentrations in dogs with acute pancreatitis compared to healthy control dogs. *J Vet Intern Med*. 2023 Jul 26. <https://doi.org/10.1111/jvim.16809>. Online ahead of print. PMID: 37496238
 - Lin HR, Xu F, Chen D, et al. The gut microbiota-bile acid axis mediates the beneficial associations between plasma vitamin D and metabolic syndrome in Chinese adults: A prospective study. *Clin Nutr*. 2023 Jun;42(6):887-898. <https://doi.org/10.1016/j.clnu.2023.03.022>. Epub 2023 Apr 13. PMID: 37158532
 - Lin X, Wu X, Zhang Y, et al. Effect of Vitamin D Supplementation on Clinical Course and T Helper 17/ TRegulatory Balance in Peripheral Blood of Patients with Crohn's Disease. *Turk J Gastroenterol*. 2023 May;34(5):463-471. <https://doi.org/10.5152/tjg.2023.22496>. PMID: 37158532
 - Luo M, Xu Y, Li J, et al. Vitamin D protects intestines from liver cirrhosis-induced inflammation and oxidative stress by inhibiting the TLR4/MyD88/NF- κ B signaling pathway. *Open Med (Wars)*. 2023 May 29;18(1):20230714. <https://doi.org/10.1515/med-2023-0714>. eCollection 2023. PMID: 37273916
 - Mariano da Rocha CR, Guaragna-Filho G, Kieling CO, et al. Daily Vitamin D Supplementation Improves Vitamin D Deficiency in Patients With Chronic Liver Disease. *J Pediatr Gastroenterol Nutr*. 2023 Jun 1;76(6):723-730. <https://doi.org/10.1097/MPG.0000000000003769>. Epub 2023 Mar 13. PMID: 36917843
 - Mathews SW, Plantinga A, Burr R, et al. Exploring the Role of Vitamin D and the Gut Microbiome: A Cross-Sectional Study of Individuals with Irritable Bowel Syndrome and Healthy Controls. *Biol Res Nurs*. 2023 Jul;25(3):436-443. <https://doi.org/10.1177/10998004221150395>. Epub 2023 Jan 9. PMID: 36624571
 - Munem F, Thianhlun PCK, Anderson PH, et al. Vitamin D is a potential treatment for the management of gastrointestinal mucositis. *Curr Opin Support Palliat Care*. 2023 Sep 1;17(3):247-252. <https://doi.org/10.1097/SPC.0000000000000651>. Epub 2023 Jun 6. PMID: 37276064
 - Saeki C, Kanai T, Ueda K, et al. Prognostic significance of sarcopenia and severe vitamin D deficiency in patients with cirrhosis. *JGH Open*. 2023 Apr 14;7(5):351-357. <https://doi.org/10.1002/jgh3.12900>. eCollection 2023 May. PMID: 37265932
 - Tourkochristou E, Mouzaki A, Triantos C. Gene Polymorphisms and Biological Effects of Vitamin D Receptor on Nonalcoholic Fatty Liver Disease Development and Progression. *Int J Mol Sci*. 2023 May 5;24(9):8288. <https://doi.org/10.3390/ijms24098288>. PMID: 37175993
 - Tourkochristou E, Tsounis EP, Tzoupi H, et al. The Influence of Single Nucleotide Polymorphisms on Vitamin D Receptor Protein Levels and Function in Chronic Liver Disease. *Int J Mol Sci*. 2023 Jul 13;24(14):11404. <https://doi.org/10.3390/ijms241411404>. PMID: 37511164
 - Xiao HY, Rao SY, Zhang DL, et al. [Explore the influence of vitamin D supplementation on clinical efficacy and drug retention rate of vedolizumab in patients with ulcerative colitis]. *Zhonghua Yi Xue Za Zhi*. 2023 Jun 20;103(23):1759-1766. <https://doi.org/10.3760/cma.j.cn112137-20221216-02663>. PMID: 37305935
 - Xing K, Wu Y, Gao F, et al. Design, synthesis and anti-hepatic fibrosis activity of novel diphenyl vitamin D receptor agonists. *Eur J Med Chem*. 2023 Oct 5;258:115596. <https://doi.org/10.1016/j.ejmech.2023.115596>. Epub 2023 Jun 26. PMID: 37406383
 - Yan C, Hu C, Chen X, et al. Vitamin D improves irritable bowel syndrome symptoms: A meta-analysis. *Heliyon*. 2023 May 25;9(6):e16437. <https://doi.org/10.1016/j.heliyon.2023.e16437>. eCollection 2023 Jun. PMID: 37260904
 - Yu XL, Li CP, He LP. Vitamin D may alleviate irritable bowel syndrome by modulating serotonin synthesis: a hypothesis based on recent literature. *Front Physiol*. 2023 Jul 27;14:1152958. <https://doi.org/10.3389/fphys.2023.1152958>. eCollection 2023. PMID: 37576336
 - Zhang Z, Moon R, Thorne JL, et al. NAFLD and vitamin D: Evidence for intersection of microRNA-regulated pathways. *Nutr Res Rev*. 2023 Jun;36(1):120-139. <https://doi.org/10.1017/S095442242100038X>. Epub 2021 Dec 9. PMID: 35109946
 - Zheng Y, Li JH, Liao SY, et al. Joint Detection of Serum Vitamin D, Body Mass Index, and Tumor Necrosis Factor Alpha for the Diagnosis of Crohn's Disease. *Curr Med Sci*. 2023 Jun;43(3):496-504. <https://doi.org/10.1007/s11596-023-2741-6>. Epub 2023 May 30. PMID: 37249734

HEMATOLOGY

- Djulejic V, Petrovic B, Jevtic J, et al. The role of cadmium in the pathogenesis of myeloid leukemia in individuals with anemia, deficiencies in vitamin D, zinc, and low calcium dietary intake. *J Trace Elem Biol*. 2023 Sep;79:127263. <https://doi.org/10.1016/j.jtemb.2023.127263>. Epub 2023 Jul 16. PMID: 37499549
- Ewendt F, Schmitt M, Kluttig A, et al. Association between vitamin D status and eryptosis-results from the German National Cohort Study. *Ann Hematol*. 2023 Jun;102(6):1351-1361. <https://doi.org/10.1007/s00277-023-05239-w>. Epub 2023 May 1. PMID: 37121914
- Ismail NH, Mussa A, Al-Khreisat MJ, et al. The Global Prevalence of Vitamin D Deficiency and Insufficiency in Patients with Multiple Myeloma: A Systematic Review and Meta-Analysis. *Nutrients*. 2023 Jul 20;15(14):3227. <https://doi.org/10.3390/15143227>. PMID: 37249734

- org/10.3390/nu15143227. PMID: 37513645
- Soepnel LM, Mabetha K, Draper CE, et al. A Cross-Sectional Study of the Associations between Biomarkers of Vitamin D, Iron Status, and Hemoglobin in South African Women of Reproductive Age: the Healthy Life Trajectories Initiative, South Africa. *Curr Dev Nutr.* 2023 Mar 30;7(5):100072. <https://doi.org/10.1016/j.cdnut.2023.100072>. eCollection 2023 May. PMID: 37180853
 - Thompson B, Lu S, Revilla J, et al. Secondary bile acids function through the vitamin D receptor in myeloid progenitors to promote myelopoiesis. *Blood Adv.* 2023 Jun 5;bloodadvances.2022009618. <https://doi.org/10.1182/bloodadvances.2022009618>. Online ahead of print. PMID: 37276450
- ## IMMUNOLOGY
- Abbas AM, Elkhatib WF, Aboulwafa MM, et al. Bioconversion of vitamin D3 into calcitriol by *Actinomyces hyovaginalis* isolate CCASU- A11-2. *AMB Express.* 2023 Jul 12;13(1):73. <https://doi.org/10.1186/s13568-023-01574-3>. PMID: 37434090
 - Abo-Amer YE, Mohamed AA, Elhoseeny MM, et al. Association Between Vitamin D Receptor Polymorphism and the Response to *Helicobacter Pylori* Treatment. *Infect Drug Resist.* 2023 Jul 8;16:4463-4469. <https://doi.org/10.2147/IDR.S414186>. eCollection 2023. PMID: 37449247
 - Artusa P, Lebel MÈ, Barbier C, et al. Cutting Edge: Aire Is a Coactivator of the Vitamin D Receptor. *J Immunol.* 2023 Jul 15;211(2):175-179. <https://doi.org/10.4049/jimmunol.2300207>. PMID: 37265392
 - Bakke DS, Zhang J, Zhang Y, et al. Myeloid vitamin D receptor regulates Paneth cells and microbial homeostasis. *FASEB J.* 2023 Jun;37(6):e22957. <https://doi.org/10.1096/fj.202202169RR>. PMID: 37219463
 - Bayat M, Razavi Moosavi N, Karimi N, et al. Increased Serum Levels of IL-1 β after Ischemic Stroke are Inversely Associated with Vitamin D. *Iran J Immunol.* 2023 Jul 11;20(3). <https://doi.org/10.22034/iji.2023.96384.2432>. Online ahead of print. PMID: 37431715
 - Berghaus IJ, Cathcart J, Berghaus RD, et al. Age-related changes in vitamin D metabolism and vitamin D receptor expression in equine alveolar macrophages: A preliminary study. *Vet Immunol Immunopathol.* 2023 May;259:110593. <https://doi.org/10.1016/j.vetimm.2023.110593>. Epub 2023 Apr 5. PMID: 37030152
 - Chiewchalerm Sri C, Sangkanjanavanich S, Pradubpongsa P, et al. Randomized, Double-Blind, Placebo-Controlled Trial of Vitamin D Supplementation in the Build-up Phase of House Dust Mite-Specific Immunotherapy. *Allergy Asthma Immunol Res.* 2023 May;15(3):336-347. <https://doi.org/10.4168/aair.2023.15.3.336>. Epub 2023 Jan 2. PMID: 37075792
 - Dos Santos VM, Sugai TAM. Visceral leishmaniasis and potential role of vitamin D. *Acta Clin Belg.* 2023 Jul 10;1-2. <https://doi.org/10.1080/17843286.2023.2233235>. Online ahead of print. PMID: 37424504
 - Elahi N, Mankani MH, Shaikh FN. The effect of vitamin D deficiency on inflammatory disorders. *J Pak Med Assoc.* 2023 May;73(5):1173. <https://doi.org/10.47391/JPMA.7984>. PMID: 37218277
 - Fan Y, Chen J, Zhu X. Effect of Vitamin D on the HMGB1/RAGE Pathway and Adipokines Levels in Obese Asthmatic Mice. *Iran J Allergy Asthma Immunol.* 2023 Jun 16;22(3):254-264. <https://doi.org/10.18502/ijaa.v22i3.13053>. PMID: 37524662
 - Fernandez GJ, Ramírez-Mejía JM, Castillo JA, et al. Vitamin D modulates expression of antimicrobial peptides and proinflammatory cytokines to restrict Zika virus infection in macrophages. *Int Immunopharmacol.* 2023 Jun;119:110232. <https://doi.org/10.1016/j.intimp.2023.110232>. Epub 2023 May 5. PMID: 37150017
 - Gao N, Raduka A, Rezaee F. Vitamin D3 protects against respiratory syncytial virus-induced barrier dysfunction in airway epithelial cells via PKA signaling pathway. *Eur J Cell Biol.* 2023 Jun 22;102(3):151336. <https://doi.org/10.1016/j.ejcb.2023.151336>. Online ahead of print. PMID: 37354621
 - Ghaseminejad-Raeini A, Ghaderi A, Sharafi A, et al. Immunomodulatory actions of vitamin D in various immune-related disorders: a comprehensive review. *Front Immunol.* 2023 Jul 14;14:950465. <https://doi.org/10.3389/fimmu.2023.950465>. eCollection 2023. PMID: 37520529
 - Grundmann SM, Herrero-Encinas J, Most E, et al. Effect of supplementation of vitamin D3 or vitamin D2 on serum concentrations of free and total 25-hydroxyvitamin D and the expression of genes involved in immune function in peripheral blood mononuclear cells of weaned pigs. *Arch Anim Nutr.* 2023 Jun;77(3):228-244. <https://doi.org/10.1080/1745039X.2023.2219176>. Epub 2023 Jun 19. PMID: 37335004
 - Huang D, Guo Y, Li X, et al. Vitamin D3/VDR inhibits inflammation through NF- κ B pathway accompanied by resisting apoptosis and inducing autophagy in abalone *Haliotis discus hannai*. *Cell Biol Toxicol.* 2023 Jun;39(3):885-906. <https://doi.org/10.1007/s10565-021-09647-4>. Epub 2021 Oct 12. PMID: 34637036
 - Jones AVW, Mironas A, Mur LAJ, et al. Vitamin D status modulates innate immune responses and metabolomic profiles following acute prolonged cycling. *Eur J Nutr.* 2023 Jul 17. <https://doi.org/10.1007/s00394-023-03181-1>. Online ahead of print. PMID: 37458775
 - Ju F, Zhu R. Association of vitamin D levels and VDR variant (rs2228570) with allergic rhinitis: A meta-analysis and trial sequential analysis. *Heliyon.* 2023 Jun 14;9(6):e17283. <https://doi.org/10.1016/j.heliyon.2023.e17283>. eCollection 2023 Jun. PMID: 37426797
 - Kalantari N, Sepidarkish M, Ghaffari S, et al. Does vitamin D reduce the mortality rate of *Plasmodium* infection?: a systematic review and meta-analysis. *Malar J.* 2023 Jun 5;22(1):173. <https://doi.org/10.1186/s12936-023-04612-4>. PMID: 37277818
 - Khrais A, Mathew AG, Kahlam A, et al. Investigating the Correlation Between *Clostridioides difficile* Infection and Vitamin D Deficiency. *Cureus.* 2023 Jun 5;15(6):e39970. <https://doi.org/10.7759/cureus.39970>. eCollection 2023 Jun. PMID: 37416010
 - King EM, Swann SA, Prior JC, et al. Vitamin D intakes among women living with and without HIV in Canada. *HIV Med.* 2023 May;24(5):628-639. <https://doi.org/10.1111/hiv.13454>. Epub 2023 Jan 4. PMID: 36597960
 - Kise S, Iijima A, Nagao C, et al. Functional analysis of vitamin D receptor (VDR) using

- adenovirus vector. *J Steroid Biochem Mol Biol.* 2023 Jun;230:106275. <https://doi.org/10.1016/j.jsbmb.2023.106275>. Epub 2023 Feb 26. PMID: 36854350
- Laird E, O'Halloran AM, Molloy AM, et al. Vitamin D status & associations with inflammation in older adults. *PLoS One.* 2023 Jun 28;18(6):e0287169. <https://doi.org/10.1371/journal.pone.0287169>. eCollection 2023. PMID: 37379302
 - Liu J, Wu X, Qin H, et al. RNF20/RNF40 ameliorates streptozotocin-induced type 1 diabetes by activating vitamin D receptors in vivo. *Allergol Immunopathol (Madr).* 2023 Jul 1;51(4):1-9. <https://doi.org/10.15586/aei.v51i4.806>. eCollection 2023. PMID: 37422774
 - Sha S, Gwenzi T, Chen LJ, et al. About the associations of vitamin D deficiency and biomarkers of systemic inflammatory response with all-cause and cause-specific mortality in a general population sample of almost 400,000 UK Biobank participants. *Eur J Epidemiol.* 2023 Jun 21. <https://doi.org/10.1007/s10654-023-01023-2>. Online ahead of print. PMID: 37340242
 - Song YJ, Zhang J, Xiao J, et al. Piscine Vitamin D Receptors Vdrr/Vdrb in the Absence of Vitamin D Are Utilized by Grass Carp Reovirus for Promoting Viral Replication. *Microbiol Spectr.* 2023 Jul 19:e0128723. <https://doi.org/10.1128/spectrum.01287-23>. Online ahead of print. PMID: 37466438
 - Thu VTA, Hoang TX, Kim JY. 1,25-Dihydroxy Vitamin D3 Facilitates the M2 Polarization and β -Amyloid Uptake by Human Microglia in a TREM2-Dependent Manner. *Biomed Res Int.* 2023 May 27;2023:3483411. <https://doi.org/10.1155/2023/3483411>. eCollection 2023. PMID: 37274074
 - Waiden J, Heydarian M, Oak P, et al. Prenatal vitamin D supplementation mitigates inflammation-related alveolar remodeling in neonatal mice. *Am J Physiol Lung Cell Mol Physiol.* 2023 Aug 1;325(2):L95-L103. <https://doi.org/10.1152/ajplung.00367.2022>. Epub 2023 May 31. PMID: 37256661
 - Xie G, Zhang Q, Fang Z, et al. Maternal Vitamin D and Inulin Supplementation in Oxidized Oil Diet Improves Growth Performance and Hepatic Innate Immunity in Offspring Mice. *Antioxidants (Basel).* 2023 Jun 28;12(7):1355. <https://doi.org/10.3390/antiox12071355>. PMID: 37507895
 - Zhang C, Han Y, Miao L, et al. Human β -defensins are correlated with the immune infiltration and regulated by vitamin D3 in periodontitis. *J Periodontol Res.* 2023 Jul 13. <https://doi.org/10.1111/jre.13159>. Online ahead of print. PMID: 37439265
 - Zhang Y, Zhou J, Hua L, et al. Vitamin D receptor (VDR) on the cell membrane of mouse macrophages participates in the formation of lipopolysaccharide tolerance: mVDR is related to the effect of artesunate to reverse LPS tolerance. *Cell Commun Signal.* 2023 May 29;21(1):124. <https://doi.org/10.1186/s12964-023-01137-w>. PMID: 37248534
 - Zhang Y, Zhou XQ, Jiang WD, et al. Vitamin D Promotes Mucosal Barrier System of Fish Skin Infected with *Aeromonas hydrophila* through Multiple Modulation of Physical and Immune Protective Capacity. *Int J Mol Sci.* 2023 Jul 8;24(14):11243. <https://doi.org/10.3390/ijms241411243>. PMID: 37511003
- ### LABORATORY
- Alexandridou A, Schorr P, Volmer DA. Comparing derivatization reagents for quantitative LC-MS/MS analysis of a variety of vitamin D metabolites. *Anal Bioanal Chem.* 2023 Aug;415(19):4689-4701. <https://doi.org/10.1007/s00216-023-04753-0>. Epub 2023 May 23. PMID: 37219579
 - Alexandridou A, Volmer DA. 2-fluoro-1-methylpyridinium p-toluene sulfonate: a new LC-MS/MS derivatization reagent for vitamin D metabolites. *J Lipid Res.* 2023 Jul 3;64(8):100409. <https://doi.org/10.1016/j.jlr.2023.100409>. Online ahead of print. PMID: 37406930
 - Anusha T, Bhavani KS, Hassan RYA, et al. Ferrocene tagged primary antibody generates electrochemical signal: An electrochemical immunosensing platform for the monitoring of vitamin D deficiency in clinical samples. *Int J Biol Macromol.* 2023 Jun 1;239:124269. <https://doi.org/10.1016/j.ijbiomac.2023.124269>. Epub 2023 Mar 31. PMID: 37003374
 - Bagheri N, Al Lawati HAJ, Hassanza-deh J, et al. Novel amino-functionalized magnetic metal-organic framework/layered double hydroxide adsorbent for microfluidic solid phase extraction: Application for vitamin D3. *Talanta.* 2023 May 1;256:124272. <https://doi.org/10.1016/j.talanta.2023.124272>. Epub 2023 Jan 19. PMID: 36709712
 - Delrue C, Speeckaert MM. Vitamin D and Vitamin D Binding Protein in Health and Disease 2.0. *Int J Mol Sci.* 2023 Jun 19;24(12):10316. <https://doi.org/10.3390/ijms241210316>. PMID: 37373463
 - Donnarumma D, Arena A, Trovato E, et al. A miniaturized comprehensive approach for total lipidome analysis and vitamin D metabolite quantification in human serum. *Anal Bioanal Chem.* 2023 Jul;415(18):4579-4590. <https://doi.org/10.1007/s00216-023-04756-x>. Epub 2023 May 25. PMID: 37225899
 - Dugar A, Hoofnagle AN, Sanchez AP, et al. The Vitamin D Metabolite Ratio (VMR) is a Biomarker of Vitamin D Status That is Not Affected by Acute Changes in Vitamin D Binding Protein. *Clin Chem.* 2023 Jul 5;69(7):718-723. <https://doi.org/10.1093/clinchem/hvad050>. PMID: 37220642
 - Gaikwad S, González CM, Vilariño D, et al. Corrigendum to "Lithocholic acid-based design of noncalcemic vitamin D receptor agonists" [Bioorg. Chem. 111 (2021) 104878]. *Bioorg Chem.* 2023 Jul;136:106559. <https://doi.org/10.1016/j.bioorg.2023.106559>. Epub 2023 May 4. PMID: 37148869
 - Gqamana PP, Militello L, McMaster JM, et al. Analytical Concordance of Total Vitamin D on a Fully Automated Random-Access LC-MS/MS Platform. *J Appl Lab Med.* 2023 Jul 20;jfad036. <https://doi.org/10.1093/jalm/jfad036>. Online ahead of print. PMID: 37473445
 - Hashemi SH, Kaykhaii M, Jamali Keikha A, et al. Deep Eutectic Solvent Stir Bar Sorptive Extraction: A Rapid Microextraction Technique for the Determination of Vitamin D3 by Spectrophotometry. *ACS Omega.* 2023 Jun 23;8(26):23643-23650. <https://doi.org/10.1021/acsomega.3c01670>. eCollection 2023 Jul 4. PMID: 37426244
 - Jacobs J, Vanneste F, Hotton J, et al. Undisclosed interference in 25-OH-Vitamin D immunoassay on Liaison XL analyzer when using heparin plasma tubes. *Scand J Clin Lab Invest.* 2023 Jul 28;1-4. <https://doi.org/10.1080/00365513.2023.2241356>. Online ahead of print. PMID: 37504570

- Kushioka T, Mano H, Matsuoka S, et al. Analysis of vitamin D metabolites in biological samples using a nanoluc-based vitamin D receptor ligand sensing system: NLucVDR. *J Steroid Biochem Mol Biol.* 2023 Jul 28;233:106367. <https://doi.org/10.1016/j.jsbmb.2023.106367>. Online ahead of print. PMID: 37517743
- Maekawa K, Ishizawa M, Ikawa T, et al. Syntheses of 25-Adamantyl-25-alkyl-2-methylidene-1 α ,25-dihydroxyvitamin D3 Derivatives with Structure-Function Studies of Antagonistic and Agonistic Active Vitamin D Analogs. *Biomolecules.* 2023 Jul 6;13(7):1082. <https://doi.org/10.3390/biom13071082>. PMID: 37509118
- Maged K, El-Henawee MM, Abd El-Hay SS. Development and validation of an eco-friendly HPLC-UV method for determination of atorvastatin and vitamin D3 in pure form and pharmaceutical formulation. *BMC Chem.* 2023 Jun 20;17(1):62. <https://doi.org/10.1186/s13065-023-00975-6>. PMID: 37340490
- Micalizzi G, Vento F, Buzzanca C, et al. Fast gas chromatography-tandem mass spectrometry under milder electron ionization conditions for the assay of vitamin D metabolites in human serum. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2023 Jul 4;1227:123813. <https://doi.org/10.1016/j.jchromb.2023.123813>. Online ahead of print. PMID: 37451138
- Schorr P, Stokes CS, Volmer DA. Improved quantitative LC-MS/MS analysis of vitamin D metabolites in serum after one-pot double derivatization. *J Pharm Biomed Anal.* 2023 Jun 14;234:115522. <https://doi.org/10.1016/j.jpba.2023.115522>. Online ahead of print. PMID: 37329649
- Takada K, Ogawa S, Yoshida N, et al. Separation and identification of monoglucuronides of vitamin D3 metabolites in urine by derivatization-assisted LC/ESI-MS/MS using a new Cookson-type reagent. *Anal Sci.* 2023 Jul;39(7):1053-1063. <https://doi.org/10.1007/s44211-023-00350-4>. Epub 2023 May 2. PMID: 37131118
- Tuma C, Thomas A, Braun H, et al. Quantification of 25-hydroxyvitamin D2 and D3 in Miitra® devices with volumetric absorptive microsampling technology (VAMS®) by UHPLC-HRMS for regular vitamin D status monitoring. *J Pharm Biomed Anal.* 2023 May 10;228:115314. <https://doi.org/10.1016/j.jpba.2023.115314>.
- Epub 2023 Mar 1. PMID: 36870118
- Usama, Khan Z, Ali A, et al. Differential glycosylation in mutant vitamin D-binding protein decimates the binding stability of vitamin D. *J Biomol Struct Dyn.* 2023 Jun 25:1-11. <https://doi.org/10.1080/07391102.2023.2226742>. Online ahead of print. PMID: 37357441
- Wise SA, Hahm G, Burdette CQ, et al. Determination of 24,25-dihydroxyvitamin D3 in Vitamin D External Quality Assessment Scheme samples using a reference measurement procedure. *J Steroid Biochem Mol Biol.* 2023 Jul;231:106318. <https://doi.org/10.1016/j.jsbmb.2023.106318>. Epub 2023 May 9. PMID: 37169270
- Yazdi ZS, Streeten EA, Whitlatch HB, et al. Critical Role for 24-Hydroxylation in Homeostatic Regulation of Vitamin D Metabolism. *medRxiv.* 2023 Jun 28:2023.06.27.23291942. <https://doi.org/10.1101/2023.06.27.23291942>. Preprint. PMID: 37425945
- Borkowski J, Stefaniak T, Cych P. Changes in Skeletal Muscle Troponin T and Vitamin D Binding Protein (DBP) Concentrations in the Blood of Male Amateur Athletes Participating in a Marathon and 100 km Adventure Race. *Int J Environ Res Public Health.* 2023 May 1;20(9):5692. <https://doi.org/10.3390/ijerph20095692>. PMID: 37174210
- Bouillon R, LeBoff MS, Neale RE. Health Effects of Vitamin D Supplementation: Lessons Learned From Randomized Controlled Trials and Mendelian Randomization Studies. *J Bone Miner Res.* 2023 Jul 22. <https://doi.org/10.1002/jbmr.4888>. Online ahead of print. PMID: 37483080
- Brennan E, Butler AE, Nandakumar M, et al. Association between Organochlorine Pesticides and Vitamin D in Female Subjects. *Biomedicine.* 2023 May 15;11(5):1451. <https://doi.org/10.3390/biomedicine11051451>. PMID: 37239122
- Brenner H. The Role of Vitamin D for Human Health: The Challenge of the Right Study Designs and Interpretation. *Nutrients.* 2023 Jun 27;15(13):2897. <https://doi.org/10.3390/nu15132897>. PMID: 37447223
- Butler AE, Brennan E, Drage DS, et al. Association of flame retardants, polybrominated diethyl ethers (PBDEs), with vitamin D in female subjects. *Chemosphere.* 2023 Oct;338:139488. <https://doi.org/10.1016/j.chemosphere.2023.139488>. Epub 2023 Jul 11. PMID: 37442384
- Butler AE, Brennan E, Drage DS, et al. Association of polychlorinated biphenyls with vitamin D in female subjects. *Environ Res.* 2023 Jun 19;233:116465. <https://doi.org/10.1016/j.envres.2023.116465>. Online ahead of print. PMID: 37343756
- Cao M, He C, Gong M, et al. The effects of vitamin D on all-cause mortality in different diseases: an evidence-map and umbrella review of 116 randomized controlled trials. *Front Nutr.* 2023 Jun 22;10:1132528. <https://doi.org/10.3389/fnut.2023.1132528>. eCollection 2023. PMID: 37426183
- Cardwell G, Bornman JF, James AP, et al. Effect of household cooking on the retention of vitamin D2 and 25-hydroxyvitamin D2 in pulse UV-irradiated, air-dried button mushrooms (*Agaricus bisporus*). *Food Chem.* 2023 Oct 30;424:136387.

MISCELLANEOUS

- Alpert JS. Hey, Doc, Should I be Taking Vitamin D Capsules Just Like My Neighbor? *Am J Med.* 2023 May 4:S0002-9343(23)00307-8. <https://doi.org/10.1016/j.amjmed.2023.04.024>. Online ahead of print. PMID: 37148988
- Asif A, Farooq N. Vitamin D Toxicity. 2023 May 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. PMID: 32491799
- Awad EA, Torky MA, Bassiouny RM, et al. Thyroid gland dysfunction and vitamin D receptor gene polymorphism in keratoconus. *Eye (Lond).* 2023 Jun;37(8):1602-1607. <https://doi.org/10.1038/s41433-022-02172-6>. Epub 2022 Aug 1. PMID: 35915233
- Bantwal G. A Review on Vitamin D Deficiency and Related Disorders: What is the Right Serum Vitamin D Level? *J Assoc Physicians India.* 2023 May;71(5):11-12. <https://doi.org/10.5005/japi-11001-0240>. PMID: 37355824
- Bergman P. Authors reply: Low vitamin D is a marker for poor health and increased risk for disease - but causality is still unclear in most cases. *J Intern Med.* 2023 Jun;293(6):793-794. <https://doi.org/10.1111/joim.13622>. Epub 2023 Mar 5. PMID: 36871252

- <https://doi.org/10.1016/j.foodchem.2023.136387>. Epub 2023 May 16. PMID: 37224637
- Carlberg C, Raczyk M, Zawrotna N. Vitamin D: A master example of nutrigenomics. *Redox Biol.* 2023 Jun;62:102695. <https://doi.org/10.1016/j.redox.2023.102695>. Epub 2023 Apr 5. PMID: 37043983
 - Carlberg C. Genomic signaling of vitamin D. *Steroids.* 2023 Jul 11;198:109271. <https://doi.org/10.1016/j.steroids.2023.109271>. Online ahead of print. PMID: 37442517
 - Carlsson H, Sreenivasan AP, Erngren I, et al. Combining the targeted and untargeted screening of environmental contaminants reveals associations between PFAS exposure and vitamin D metabolism in human plasma. *Environ Sci Process Impacts.* 2023 Jun 21;25(6):1116-1130. <https://doi.org/10.1039/d3em00060e>. PMID: 37222023
 - Chaves MA, Dacanal GC, Pinho SC. High-shear wet agglomeration process for enriching cornstarch with curcumin and vitamin D3 co-loaded lyophilized liposomes. *Food Res Int.* 2023 Jul;169:112809. <https://doi.org/10.1016/j.foodres.2023.112809>. Epub 2023 Apr 15. PMID: 37254385
 - Ciarambino T, Crispino P, Minervini G, et al. Vitamin D: Can Gender Medicine Have a Role? *Biomedicines.* 2023 Jun 19;11(6):1762. <https://doi.org/10.3390/biomedicines11061762>. PMID: 37371857
 - Clark A, Kuznesof S, Waller A, et al. The Influence of Storage and Cooking on the Vitamin D Content of 25-Hydroxyvitamin D3-Enriched Eggs. *Foods.* 2023 Jun 28;12(13):2522. <https://doi.org/10.3390/foods12132522>. PMID: 37444260
 - Crafa A, Cannarella R, Barbagallo F, et al. Mechanisms Suggesting a Relationship between Vitamin D and Erectile Dysfunction: An Overview. *Biomolecules.* 2023 Jun 1;13(6):930. <https://doi.org/10.3390/biom13060930>. PMID: 37371510
 - Dambrós BF, Batista da Silva H, de Moura KRS, et al. Influence of the aquatic environment and 1 α ,25(OH) $_2$ vitamin D3 on calcium influx in the intestine of adult zebrafish. *Biochimie.* 2023 Jul 8;214(Pt B):123-133. <https://doi.org/10.1016/j.biochi.2023.07.004>. Online ahead of print. PMID: 37429409
 - Di Giorgio G, Relucanti M, Iaculli F, et al. The Application of a Fluoride-and-Vitamin D Solution to Deciduous Teeth Promotes Formation of Persistent Mineral Crystals: A Morphological Ex-Vivo Study. *Materials (Basel).* 2023 May 29;16(11):4049. <https://doi.org/10.3390/ma16114049>. PMID: 37297180
 - Dosi MCM, Riggs CM, May J, et al. Thoroughbred Racehorses in Hong Kong Require Vitamin D Supplementation to Mitigate the Risk of Low Vitamin D Status. *Animals (Basel).* 2023 Jun 29;13(13):2145. <https://doi.org/10.3390/ani13132145>. PMID: 37443942
 - Draxler A, Franzke B, Kelecevic S, et al. The influence of vitamin D supplementation and strength training on health biomarkers and chromosomal damage in community-dwelling older adults. *Redox Biol.* 2023 May;61:102640. <https://doi.org/10.1016/j.redox.2023.102640>. Epub 2023 Feb 21. PMID: 36857929
 - Ebrahimi A, Hamishehkar H, Amjadi S. Development of gelatin-coated nanoliposomes loaded with β -cyclodextrin/vitamin D3 inclusion complex for nutritional therapy. *Food Chem.* 2023 Oct 30;424:136346. <https://doi.org/10.1016/j.foodchem.2023.136346>. Epub 2023 May 11. PMID: 37201470
 - Fitzgerald JS, Swanson BJ, Larson-Meyer DE. Vitamin D Knowledge, Awareness, and Attitudes of Adolescents and Adults: A Systematic Review. *J Nutr Educ Behav.* 2023 Aug;55(8):585-595. <https://doi.org/10.1016/j.jneb.2023.04.010>. Epub 2023 Jun 30. PMID: 37389497
 - Forouhari A, Heidari-Beni M, Veisi S, et al. Effect of epigenetics on vitamin D levels: a systematic review until December 2020. *Arch Public Health.* 2023 Jun 15;81(1):106. <https://doi.org/10.1186/s13690-023-01122-2>. PMID: 37322552
 - Gallagher JC, Rosen CJ. Vitamin D: 100 years of discoveries, yet controversy continues. *Lancet Diabetes Endocrinol.* 2023 May;11(5):362-374. [https://doi.org/10.1016/S2213-8587\(23\)00060-8](https://doi.org/10.1016/S2213-8587(23)00060-8). Epub 2023 Mar 30. PMID: 37004709
 - Ganie MA, Sidana S, Baba MS, et al. Efficacy and safety of various oral regimens (three oral doses) and schedules (daily v. monthly) of cholecalciferol in North Indian adults with low vitamin D status: evidence from a randomised controlled trial. *Br J Nutr.* 2023 May 28;129(10):1732-1739. <https://doi.org/10.1017/S0007114522002641>. Epub 2022 Aug 19. PMID: 35983775
 - Gezen-Ak D, Alaylıoğlu M, Yurttaş Z, et al. Vitamin D receptor regulates transcription of mitochondrial DNA and directly interacts with mitochondrial DNA and TFAM. *J Nutr Biochem.* 2023 Jun;116:109322. <https://doi.org/10.1016/j.jnutbio.2023.109322>. Epub 2023 Mar 23. PMID: 36963731
 - Gómez-Bouzó U, Belorusova AY, Rivadulla ML, et al. Structural analysis and biological activities of C25-amino and C25-nitro vitamin D analogs. *Bioorg Chem.* 2023 Jul;136:106528. <https://doi.org/10.1016/j.bioorg.2023.106528>. Epub 2023 Apr 6. PMID: 37054528
 - Gospodarska E, Ghosh Dastidar R, Carlberg C. Intervention Approaches in Studying the Response to Vitamin D3 Supplementation. *Nutrients.* 2023 Jul 29;15(15):3382. <https://doi.org/10.3390/nu15153382>. PMID: 37571318
 - Grant WB, Boucher BJ. Regarding: Low vitamin D is a marker for poor health and increased risk for disease: But causality is still unclear in most cases. *J Intern Med.* 2023 Jun;293(6):791-792. <https://doi.org/10.1111/joim.13621>. Epub 2023 Feb 22. PMID: 36814179
 - Grant WB, van Amerongen BM, Boucher BJ. Periodontal Disease and Other Adverse Health Outcomes Share Risk Factors, including Dietary Factors and Vitamin D Status. *Nutrients.* 2023 Jun 17;15(12):2787. <https://doi.org/10.3390/nu15122787>. PMID: 37375691
 - Gudeman AS, Dine SA, Walroth TA, et al. Characterization of vitamin D deficiency and use of a standardized supplementation protocol in orthopaedic trauma patients. *Eur J Orthop Surg Traumatol.* 2023 May;33(4):955-960. <https://doi.org/10.1007/s00590-022-03231-0>. Epub 2022 Mar 1. PMID: 35230543
 - Habacher G, Malik R, Lait PJ, et al. Feline precision medicine using whole-exome sequencing identifies a novel frame-shift mutation for vitamin D-dependent rickets type 2. *J Feline Med Surg.* 2023

- Jun;25(6):1098612X231165630. <https://doi.org/10.1177/1098612X231165630>. PMID: 37387221
- Hassanin HM, Ismail OI. Could vitamin D protect against high fat diet induced damage in the arcuate nucleus in the rat: histological, immunohistochemical and ultrastructural study. *Ultrastruct Pathol.* 2023 Jul 4;47(4):292-303. <https://doi.org/10.1080/01913123.2023.2195484>. Epub 2023 Mar 29. PMID: 36992558
 - Hendi NN, Nemer G. Epigenetic regulation of vitamin D deficiency. *Epigenomics.* 2023 Jul 18. <https://doi.org/10.2217/epi-2023-0246>. Online ahead of print. PMID: 37461377
 - Hnokaew P, Moonmanee T, Phatsara C, et al. Effect of UVB irradiated vitamin D enriched yeast supplementation on milk performance and blood chemical profiles in dairy cows. *Anim Biosci.* 2023 May 4. <https://doi.org/10.5713/ab.23.0013>. Online ahead of print. PMID: 37170501
 - Horváth L, Mirani S, Girgis MMF, et al. Six years' experience and trends of serum 25-hydroxy vitamin D concentration and the effect of vitamin D3 consumption on these trends. *Front Pharmacol.* 2023 Jul 14;14:1232285. <https://doi.org/10.3389/fphar.2023.1232285>. eCollection 2023. PMID: 37521483
 - Hu T, Ren L, Li H, et al. Effects of Vitamin D supplementation or deficiency on metabolic phenotypes in mice of different sexes. *J Steroid Biochem Mol Biol.* 2023 May;229:106250. <https://doi.org/10.1016/j.jsmb.2023.106250>. Epub 2023 Jan 25. PMID: 36708934
 - Huang J, Lei J, Ge A, et al. Antifungal Effect of Vitamin D3 against *Cryptococcus neoformans* Coincides with Reduced Biofilm Formation, Compromised Cell Wall Integrity, and Increased Generation of Reactive Oxygen Species. *J Fungi (Basel).* 2023 Jul 21;9(7):772. <https://doi.org/10.3390/jof9070772>. PMID: 37504760
 - Huh KY, Lee H, Lee S, et al. Exploration of smart adherence-monitoring methods in vitamin D-deficient patients: A pilot feasibility clinical study. *Clin Transl Sci.* 2023 Jul 18. <https://doi.org/10.1111/cts.13594>. Online ahead of print. PMID: 37461832
 - Iwasaki M, Motokawa K, Shirobe M, et al. Serum levels of vitamin D and periodontal inflammation in community-dwelling older Japanese adults: The Otassha Study. *J Clin Periodontol.* 2023 Jun 15. <https://doi.org/10.1111/jcpe.13834>. Online ahead of print. PMID: 37317881
 - Jodar E, Campusano C, de Jongh RT, et al. Calcifediol: a review of its pharmacological characteristics and clinical use in correcting vitamin D deficiency. *Eur J Nutr.* 2023 Jun;62(4):1579-1597. <https://doi.org/10.1007/s00394-023-03103-1>. Epub 2023 Mar 2. PMID: 36862209
 - Kandambeth V, Nagrale P, Daigavane S. Estimation of Vitamin D Levels in Patients With Retinal Vein Occlusions and a Comparison With Age-Matched Control Groups. *Cureus.* 2023 May 11;15(5):e38909. <https://doi.org/10.7759/cureus.38909>. eCollection 2023 May. PMID: 37313088
 - Kearns MD, Binongo JNG, Watson D, et al. Correction: The effect of a single, large bolus of vitamin D in healthy adults over the winter and following year: a randomized, double-blind, placebo-controlled trial. *Eur J Clin Nutr.* 2023 Jun;77(6):698. <https://doi.org/10.1038/s41430-023-01277-9>. PMID: 37161066
 - Kim KJ, Choi J, Kim KJ, et al. All-cause and cause-specific mortality risks associated with calcium supplementation with or without vitamin D: A nationwide population-based study. *J Intern Med.* 2023 Jul;294(1):83-95. <https://doi.org/10.1111/joim.13643>. Epub 2023 Apr 24. PMID: 37056045
 - Kopp L, Schweinlin A, Tingö L, et al. Potential Modulation of Inflammation and Physical Function by Combined Probiotics, Omega-3 Supplementation and Vitamin D Supplementation in Overweight/Obese Patients with Chronic Low-Grade Inflammation: A Randomized, Placebo-Controlled Trial. *Int J Mol Sci.* 2023 May 10;24(10):8567. <https://doi.org/10.3390/ijms24108567>. PMID: 37239916
 - Kose Celebi N, Deveci HS, Kulekci Ozturk S, et al. Clinical role of vitamin D, vitamin B12, folate levels and hematological parameters in patients with sudden sensorineural hearing loss. *Acta Otolaryngol.* 2023 Jul 27:1-6. <https://doi.org/10.1080/00016489.2023.2235398>. Online ahead of print. PMID: 37498186
 - Lange U, Schulz N, Klemm P. [Lifestyle medication vitamin D. What evidence is available?]. *Z Rheumatol.* 2023 Jul 28. <https://doi.org/10.1007/s00393-023-01392-9>. Online ahead of print. PMID: 37505295
 - Lee JH, Kim YA, Kim YS, et al. Association between Vitamin D Deficiency and Clinical Parameters in Men and Women Aged 50 Years or Older: A Cross-Sectional Cohort Study. *Nutrients.* 2023 Jul 5;15(13):3043. <https://doi.org/10.3390/nu15133043>. PMID: 37447368
 - Lestari MI, Murti K, Liberty IA, et al. Association of vitamin D with deoxyribonucleic acid (dna) damage: A systematic review of animal and human studies. *Acta Biochim Pol.* 2023 Jun 17;70(2):379-387. https://doi.org/10.18388/abp.2020_6641. PMID: 37329504
 - Li Y, Wang J, Cai Y, et al. Association of Serum Vitamin D With Periodontal Disease. *Int Dent J.* 2023 Jul 5:S0020-6539(23)00095-3. <https://doi.org/10.1016/j.identj.2023.06.004>. Online ahead of print. PMID: 37419778
 - 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 Jun 13;23(1):387. <https://doi.org/10.1186/s12903-023-03120-w>. PMID: 37312090
 - Liermann W, Halle I, Frahm J, et al. Genotype-dependent impact of dietary vitamin D3 on laying hens. *Arch Anim Nutr.* 2023 Jun;77(3):205-227. <https://doi.org/10.1080/1745039X.2023.2212574>. Epub 2023 Jun 1. PMID: 37263588
 - Liu X, Dai B, Chuai Y, et al. Associations between vitamin D levels and periodontal attachment loss. *Clin Oral Investig.* 2023 Aug;27(8):4727-4733. <https://doi.org/10.1007/s00784-023-05100-4>. Epub 2023 Jun 8. PMID: 37291391
 - Lu X, Chen Z, Lu J, et al. Effects of Topical 1,25 and 24,25 Vitamin D on Diabetic, Vitamin D Deficient and Vitamin D Receptor Knockout Mouse Corneal Wound Healing. *Biomolecules.* 2023 Jul 1;13(7):1065. <https://doi.org/10.3390/biom13071065>. PMID: 37509101
 - Luo Y, Qu C, Zhang R, et al. Diet, physical activity, and UV protection comprehensively influenced vitamin D status in college students: a cross-section study from China. *J Health Popul Nutr.* 2023 Jul 26;42(1):73.

- <https://doi.org/10.1186/s41043-023-00421-2>. PMID: 37496103
- Maggini V, Crescioli G, Ippoliti I, et al. Safety Profile of Vitamin D in Italy: An Analysis of Spontaneous Reports of Adverse Reactions Related to Drugs and Food Supplements. *J Clin Med*. 2023 Jul 17;12(14):4726. <https://doi.org/10.3390/jcm12144726>. PMID: 37510843
 - Manca A, Mula J, Palermi A, et al. Vitamin D impact in affecting clozapine plasma exposure: A potential contribution of seasonality. *Biomed Pharmacother*. 2023 Jul 4;165:115103. <https://doi.org/10.1016/j.biopha.2023.115103>. Online ahead of print. PMID: 37413901
 - Markopoulos G, Agrogiannis G, Perrea DN, et al. Evaluation of Vitamin D-enriched Bone Graft in Surgically-induced Critical-sized Bone Defects: An experimental study. *J Craniofac Surg*. 2023 Jun 19. <https://doi.org/10.1097/SCS.0000000000009490>. Online ahead of print. PMID: 37336500
 - Molina-López J, Herrera-Quintana L, Vázquez-Lorente H, et al. Evolution of Vitamin D Status and Vitamin D Receptor Gene Expression Among Professional Handball Athletes During a Competitive Period. Relationship with Body Composition, Calcium, Magnesium and Phosphorous. *Biol Trace Elem Res*. 2023 Jul 6. <https://doi.org/10.1007/s12011-023-03760-7>. Online ahead of print. PMID: 37410265
 - Narvaiz DA, Kwok EM, Hodges SL, et al. Vitamin D supplementation positively affects activity but impairs stimulus response behavior in an age and sex specific manner in C57BL/6 mice. *Neurotoxicol Teratol*. 2023 Jul-Aug;98:107180. <https://doi.org/10.1016/j.ntt.2023.107180>. Epub 2023 May 7. PMID: 37160210
 - Nascimento IMCD, Padilha BM, Araújo MLD, et al. Vitamin D LEVELS AND LIPID PROFILE IN PATIENTS UNDERGOING BARIATRIC SURGERY. *Arq Bras Cir Dig*. 2023 Jul 28;36:e1753. <https://doi.org/10.1590/0102-672020230035e1753>. eCollection 2023. PMID: 37531473
 - Neill HR, Gill CIR, McDonald EJ, et al. Improving vitamin D content in pork meat by UVB biofortification. *Meat Sci*. 2023 May;199:109115. <https://doi.org/10.1016/j.meatsci.2023.109115>. Epub 2023 Jan 14. PMID: 36753832
 - Nield L, Bowles SD. Assessment, treatment and prevention of vitamin D deficiency. *Nurs Stand*. 2023 Aug 2;38(8):70-77. <https://doi.org/10.7748/ns.2023.e12136>. Epub 2023 Jul 31. PMID: 37519156
 - Norlin M, Wikvall K. Enzymatic activation in vitamin D signaling - Past, present and future. *Arch Biochem Biophys*. 2023 Jul 1;742:109639. <https://doi.org/10.1016/j.abb.2023.109639>. Epub 2023 May 18. PMID: 37196753
 - Nuti R, Gennari L, Cavati G, et al. Dietary Vitamin D Intake in Italian Subjects: Validation of a Frequency Food Questionnaire (FFQ). *Nutrients*. 2023 Jun 29;15(13):2969. <https://doi.org/10.3390/nu15132969>. PMID: 37447294
 - Oda Y, Wong CT, Oh DH, et al. Vitamin D receptor cross-talk with p63 signaling promotes epidermal cell fate. *J Steroid Biochem Mol Biol*. 2023 Jun 16;232:106352. <https://doi.org/10.1016/j.jsbmb.2023.106352>. Online ahead of print. PMID: 37330071
 - Orsatti CL, Orsatti FL, de Souza JPEA, et al. Impact of vitamin D supplementation on modulating heat-shock proteins in postmenopausal women: a randomized, double-blind, placebo-controlled study. *Menopause*. 2023 Jul 1;30(7):758-765. <https://doi.org/10.1097/GME.0000000000002197>. PMID: 37220771
 - Park S, Kang S. Interaction of polygenic variants related to inflammation with carbohydrate and vitamin D intakes in middle-aged and older adults in a large hospital-based cohort. *Br J Nutr*. 2023 Jul 28;130(2):331-343. <https://doi.org/10.1017/S0007114522001453>. Epub 2022 May 10. PMID: 35535979
 - Passeri G, Giannini S. Benefits of Vitamin D in Health and Diseases. *Nutrients*. 2023 May 23;15(11):2419. <https://doi.org/10.3390/nu15112419>. PMID: 37299383
 - Patel S, Patel S, Shah RM, et al. Effects of sun protection on serum vitamin D deficiency. *Photodermatol Photoimmunol Photomed*. 2023 Jul;39(4):394-396. <https://doi.org/10.1111/phpp.12838>. Epub 2022 Oct 20. PMID: 36181727
 - Pellegrino G, Ascenti V, Desiderio E, et al. Vitamin D intoxication: myth or reality. *Minerva Med*. 2023 Jul 18. <https://doi.org/10.23736/S0026-4806.23.08795-5>. Online ahead of print. PMID: 37462476
 - Przewłocka K, Kujach S, Sawicki P, et al. Effects of Probiotics and Vitamin D3 Supplementation on Sports Performance Markers in Male Mixed Martial Arts Athletes: A Randomized Trial. *Sports Med Open*. 2023 May 16;9(1):31. <https://doi.org/10.1186/s40798-023-00576-6>. PMID: 37193828
 - Radhakrishnan A, Spencer S, Yanamala N, et al. Evaluating the Efficacy and Safety of EZC Pak, a 5-Day Combination Echinacea-Zinc-Vitamin C Dose Pack with or without Vitamin D, in the Management of Outpatient Upper Respiratory Infections. *Infect Drug Resist*. 2023 May 3;16:2561-2572. <https://doi.org/10.2147/IDR.S392087>. eCollection 2023. PMID: 37163146
 - Rahman F, Brates I, Aweeka F, et al. Evaluating the effect of atorvastatin exposure and vitamin D levels on lipid outcomes in people with HIV-1 with suppressed HIV-1 RNA and LDL cholesterol <130mg/dL. *HIV Med*. 2023 Jun;24(6):749-753. <https://doi.org/10.1111/hiv.13453>. Epub 2022 Dec 22. PMID: 36549898
 - Raymond-Lezman JR, Riskin SI. Benefits and Risks of Sun Exposure to Maintain Adequate Vitamin D Levels. *Cureus*. 2023 May 5;15(5):e38578. <https://doi.org/10.7759/cureus.38578>. eCollection 2023 May. PMID: 37284402
 - Rebelos E, Tentolouris N, Jude E. The Role of Vitamin D in Health and Disease: A Narrative Review on the Mechanisms Linking Vitamin D with Disease and the Effects of Supplementation. *Drugs*. 2023 Jun;83(8):665-685. <https://doi.org/10.1007/s40265-023-01875-8>. Epub 2023 May 6. PMID: 37148471
 - Reid C, Flores-Villalva S, Remot A, et al. Long-term in vivo vitamin D3 supplementation modulates bovine IL-1 and chemokine responses. *Sci Rep*. 2023 Jul 5;13(1):10846. <https://doi.org/10.1038/s41598-023-37427-z>. PMID: 37407588
 - Repas SJ, Schmeusser BN, McCullough WP, et al. Normal 24-hour urine calcium concentrations after long-term daily oral intake of vitamin D in doses ranging from 5000 to 50,000 international units in 14 adult hospitalized psychiatrists.

- ric patients. *J Steroid Biochem Mol Biol.* 2023 Jul;231:106329. <https://doi.org/10.1016/j.jsbmb.2023.106329>. Epub 2023 May 12. PMID: 37182752
- Ribeiro LSFE, Araujo NS, Zilli Vieira CL, et al. Impact of serum vitamin D levels on periodontal healing outcomes: A preliminary cohort study. *Int J Dent Hyg.* 2023 May;21(2):291-297. <https://doi.org/10.1111/idh.12619>. Epub 2022 Sep 11. PMID: 36048921
 - Rohdin C, Wang C, Brander G, et al. Mutations in the CYP27B1 gene cause vitamin D dependent rickets in pugs. *J Vet Intern Med.* 2023 Jul-Aug;37(4):1507-1513. <https://doi.org/10.1111/jvim.16791>. Epub 2023 Jun 9. PMID: 37293695
 - Ruiz-González A, Suissi W, Baumgard LH, et al. Increased dietary vitamin D3 and calcium partially alleviate heat stress symptoms and inflammation in lactating Holstein cows independent of dietary concentrations of vitamin E and selenium. *J Dairy Sci.* 2023 Jun;106(6):3984-4001. <https://doi.org/10.3168/jds.2022-22345>. Epub 2023 May 8. PMID: 37164847
 - Sanford BS, Aliano JL, Omary CS, et al. Exposure to a Vitamin D Best Practices Toolkit, Model, and E-Tools Increases Knowledge, Confidence, and the Translation of Research to Public Health and Practice. *Nutrients.* 2023 May 24;15(11):2446. <https://doi.org/10.3390/nu15112446>. PMID: 37299409
 - Santa K, Watanabe K, Kumazawa Y, et al. Phytochemicals and Vitamin D for a Healthy Life and Prevention of Diseases. *Int J Mol Sci.* 2023 Jul 29;24(15):12167. <https://doi.org/10.3390/ijms241512167>. PMID: 37569540
 - Santos HO, Martins CEC, Forbes SC, et al. A Scoping Review of Vitamin D for Nonskeletal Health: A Framework for Evidence-based Clinical Practice. *Clin Ther.* 2023 May;45(5):e127-e150. <https://doi.org/10.1016/j.clinthera.2023.03.016>. Epub 2023 Apr 18. PMID: 37080887
 - Sarsithithum K, Wisupagan T, Kiatthanabumrung S, et al. The Association Between Serum Vitamin D Levels and Benign Paroxysmal Positional Vertigo. *Ear Nose Throat J.* 2023 Jul;102(7):473-477. <https://doi.org/10.1177/01455613211008561>. Epub 2021 Apr 18. PMID: 33866868
 - Sauvé B, Chorfi Y, Montminy ML, et al. Vitamin D Supplementation Impacts Calcium and Phosphorus Metabolism in Piglets Fed a Diet Contaminated with Deoxynivalenol and Challenged with Lipopolysaccharides. *Toxins (Basel).* 2023 Jun 13;15(6):394. <https://doi.org/10.3390/toxins15060394>. PMID: 37368695
 - Schoenmakers I, Fraser WVD, Forbes A. Vitamin D and acute and severe illness - a mechanistic and pharmacokinetic perspective. *Nutr Res Rev.* 2023 Jun;36(1):23-38. <https://doi.org/10.1017/S0954422421000251>. Epub 2021 Aug 9. PMID: 34369338
 - Schrack JA, Cai Y, Urbanek JK, et al. The association of vitamin D supplementation and serum vitamin D levels with physical activity in older adults: Results from a randomized trial. *J Am Geriatr Soc.* 2023 Jul;71(7):2208-2218. <https://doi.org/10.1111/jgs.18290>. Epub 2023 Feb 23. PMID: 36821761 Clinical Trial.
 - Simonova N, Kirichek M, Trofimova AA, et al. The Functional States of the Participants of a Marine Arctic Expedition with Different Levels of Vitamin D in Blood. *Int J Environ Res Public Health.* 2023 Jun 9;20(12):6092. <https://doi.org/10.3390/ijerph20126092>. PMID: 37372679
 - Sivagurunathan U, Dominguez D, Tseng Y, et al. Interaction between Dietary Vitamin D3 and Vitamin K3 in Gilthead Seabream Larvae (*Sparus aurata*) in Relation to Growth and Expression of Bone Development-Related Genes. *Aquac Nutr.* 2023 May 23;2023:3061649. <https://doi.org/10.1155/2023/3061649>. eCollection 2023. PMID: 37260465
 - Takacs I, Bakos B, Nemeth Z, et al. Controlled randomised open label clinical study comparing the safety and efficacy of loading schedules in vitamin D deficient patients. *J Steroid Biochem Mol Biol.* 2023 Jul;231:106330. <https://doi.org/10.1016/j.jsbmb.2023.106330>. Epub 2023 May 12. PMID: 37182754
 - Talvas J, Norgieux C, Burban E, et al. Vitamin D deficiency contributes to overtraining syndrome in excessive trained C57BL/6 mice. *Scand J Med Sci Sports.* 2023 Jul 14. <https://doi.org/10.1111/sms.14449>. Online ahead of print. PMID: 37452567
 - Thiering E, Markevych I, Kress S, et al. Gene-environment interaction in the association of residential greenness and 25(OH) vitamin D. *Environ Pollut.* 2023 Jun 15;327:121519. <https://doi.org/10.1016/j.envpol.2023.121519>. Epub 2023 Mar 27. PMID: 36990343
 - Trifan DF, Tirla AG, Moldovan AF, et al. Can Vitamin D Levels Alter the Effectiveness of Short-Term Facelift Interventions? *Healthcare (Basel).* 2023 May 20;11(10):1490. <https://doi.org/10.3390/healthcare11101490>. PMID: 37239776
 - Vatanparast H, Longworth ZL. How does Canada's new vitamin D fortification policy affect the high prevalence of inadequate intake of the vitamin? *Appl Physiol Nutr Metab.* 2023 Jun 30. <https://doi.org/10.1139/apnm-2023-0178>. Online ahead of print. PMID: 37390498
 - Wei X, Pandohee J, Xu B. Recent developments and emerging trends in dietary vitamin D sources and biological conversion. *Crit Rev Food Sci Nutr.* 2023 Jun 26:1-17. <https://doi.org/10.1080/10408398.2023.2220793>. Online ahead of print. PMID: 37357915
 - Wiedemann J, Cursiefen C. [Band keratopathy in ectopic vitamin D production in sarcoidosis]. *Ophthalmologie.* 2023 Jul;120(7):763-766. <https://doi.org/10.1007/s00347-022-01679-3>. Epub 2022 Jul 19. PMID: 35925356
 - Wimalawansa SJ. Physiological Basis for Using Vitamin D to Improve Health. *Biomedicines.* 2023 May 26;11(6):1542. <https://doi.org/10.3390/biomedicines11061542>. PMID: 37371637
 - Wolf AT, Klawe J, Liu B, et al. Association Between Serum Vitamin D Levels and Myopia in the National Health and Nutrition Examination Survey (2001-2006). *Ophthalmic Epidemiol.* 2023 Jul 6:1-11. <https://doi.org/10.1080/09286586.2023.2232460>. Online ahead of print. PMID: 37415384
 - Yang B, Zhu Y, Zheng X, et al. Vitamin D Supplementation during Intensive Care Unit Stay Is Associated with Improved Outcomes in Critically Ill Patients with Sepsis: A Cohort Study. *Nutrients.* 2023 Jun 28;15(13):2924. <https://doi.org/10.3390/nu15132924>. PMID: 37447250
 - Yazdi ZS, Streeten EA, Whitlatch HB, et al. Vitamin D deficiency increases vulnerability

- to canagliflozin-induced adverse effects on 1,25-dihydroxyvitamin D and PTH. *medRxiv*. 2023 May 11;2023.05.11.23289854. <https://doi.org/10.1101/2023.05.11.23289854>. Preprint. PMID: 37214882
- Zhang Q, Zhang Z, He X, et al. Vitamin D levels and the risk of overactive bladder: a systematic review and meta-analysis. *Nutr Rev*. 2023 May 17;nuad049. <https://doi.org/10.1093/nutrit/nuad049>. Online ahead of print. PMID: 37195440
 - Zhao X, Yang X, Bao Y, et al. Construction of vitamin D delivery system based on pine nut oil Pickering emulsion: effect of phenols. *J Sci Food Agric*. 2023 Jun;103(8):4034-4046. <https://doi.org/10.1002/jsfa.12363>. Epub 2023 Mar 21. PMID: 36453713
 - Zheng S, Zhu Z, Ding C. How can we design a proper trial for vitamin D treatment of diseases? Facts and numbers. *J Cachexia Sarcopenia Muscle*. 2023 Jun;14(3):1146-1149. <https://doi.org/10.1002/jcsm.13200>. Epub 2023 Apr 18. PMID: 37073430
 - Zittermann A, Trummer C, Theiler-Schwetz V, et al. Long-term supplementation with 3200 to 4000 IU of vitamin D daily and adverse events: a systematic review and meta-analysis of randomized controlled trials. *Eur J Nutr*. 2023 Jun;62(4):1833-1844. <https://doi.org/10.1007/s00394-023-03124-w>. Epub 2023 Feb 28. PMID: 37489201
- ## NEPHROLOGY
- Ahmad S, Ullah H, Khan MI, et al. Effect of Vitamin D Supplementation on the Hemoglobin Level in Chronic Kidney Disease Patients on Hemodialysis: A Systematic Review and Meta-Analysis. *Cureus*. 2023 Jun 23;15(6):e40843. <https://doi.org/10.7759/cureus.40843>. eCollection 2023 Jun. PMID: 37489201
 - Arroyo E, Leber CA, Burney HN, et al. Epi-meric vitamin D and cardiovascular structure and function in advanced CKD and after kidney transplantation. *Nephrol Dial Transplant*. 2023 Jul 19;gfad168. <https://doi.org/10.1093/ndt/gfad168>. Online ahead of print. PMID: 37468453
 - Bai YJ, Li YM, Hu SM, et al. Vitamin D supplementation reduced blood inflammatory cytokines expression and improved graft function in kidney transplant recipients. *Front Immunol*. 2023 Jul 6;14:1152295. <https://doi.org/10.3389/fimmu.2023.1152295>. eCollection 2023. PMID: 37483634
 - Caus M, Alonso-Montes C, Fernandez-Martin JL, et al. Vitamin D Receptor From VSMCs Regulates Vascular Calcification During CKD: A Potential Role for miR-145a. *Arterioscler Thromb Vasc Biol*. 2023 Aug;43(8):1533-1548. <https://doi.org/10.1161/ATVBAHA.122.318834>. Epub 2023 Jun 29. PMID: 37381989
 - Chen H, Song N, Li AM, et al. Association of vitamin D metabolites with arterio-venous fistula function in hemodialysis patients: A single center study. *Hemodial Int*. 2023 Jul;27(3):231-240. <https://doi.org/10.1111/hdi.13080>. Epub 2023 Apr 3. PMID: 37010240
 - Christodoulou M, Aspray TJ, Piec I, et al. Early renal impairment affects hormonal regulators of calcium and bone metabolism and Wnt signalling and the response to vitamin D supplementation in healthy older adults. *J Steroid Biochem Mol Biol*. 2023 May;229:106267. <https://doi.org/10.1016/j.jsbmb.2023.106267>. Epub 2023 Feb 3. PMID: 36739953
 - de Oliveira E Silva Ullmann T, Ramalho BJ, Laurindo LF, et al. Effects of Vitamin D Supplementation in Diabetic Kidney Disease: An Systematic Review. *J Ren Nutr*. 2023 Jun 9;S1051-2276(23)00095-X. <https://doi.org/10.1053/j.jrn.2023.05.006>. Online ahead of print. PMID: 37302723
 - Dialameh H, Nikoobakht M, Menbari Oskouie I, et al. Assessment of the relationship between vitamin D with semen analysis parameters and reproductive hormones levels before and after kidney transplantation: An Iranian randomized and double-blinded study. *Urologia*. 2023 May;90(2):272-277. <https://doi.org/10.1177/03915603231162394>. Epub 2023 Apr 3. PMID: 37006175
 - He M, Yang T, Zhou P, et al. A Mendelian randomization study on causal effects of 25(OH) vitamin D levels on diabetic nephropathy. *BMC Nephrol*. 2023 Jun 27;24(1):192. <https://doi.org/10.1186/s12882-023-03186-2>. PMID: 37369991
 - Heister DJ, Bohnert BN, Heyne N, et al. Two cases of severe vitamin D3 intoxication treated with therapeutic plasma exchange and high cut-off hemodialysis. *J Nephrol*. 2023 Jun;36(5):1461-1467. <https://doi.org/10.1007/s40620-022-01543-2>. Epub 2022 Dec 22. PMID: 36547775
 - Hsu S, Zelnick LR, Bansal N, et al. Vitamin D Metabolites and Risk of Cardiovascular Disease in Chronic Kidney Disease: The CRIC Study. *J Am Heart Assoc*. 2023 Jul 18;12(14):e028561. <https://doi.org/10.1161/JAHA.122.028561>. Epub 2023 Jul 8. PMID: 37421259
 - Mason N, Sweet LM, Wills Z, et al. Vitamin D Abuse in Pursuit of "Gains" Resulting in Acute Kidney Injury. *Mil Med*. 2023 Jul 4;usad237. <https://doi.org/10.1093/milmed/usad237>. Online ahead of print. PMID: 37402617
 - Obaid AA, Almasmoum H, Almairani RA, et al. Vitamin D and calcium co-therapy mitigates pre-established cadmium nephropathy by regulating renal calcium homeostatic molecules and improving anti-oxidative and anti-inflammatory activities in rat. *J Trace Elem Med Biol*. 2023 Sep;79:127221. <https://doi.org/10.1016/j.jtemb.2023.127221>. Epub 2023 May 24. PMID: 37244046
 - Pilkey NG, Novosel O, Roy A, et al. Does Native Vitamin D Supplementation Have Pleiotropic Effects in Patients with End-Stage Kidney Disease? A Systematic Review of Randomized Trials. *Nutrients*. 2023 Jul 7;15(13):3072. <https://doi.org/10.3390/nu15133072>. PMID: 37447398
 - Sardari Masihi L, Borumandnia N, Taheri M, et al. Effect of two vitamin D repletion protocols on 24-h urine calcium in patients with recurrent calcium kidney stones and vitamin D deficiency: a randomized clinical trial. *Eur J Med Res*. 2023 Jul 22;28(1):246. <https://doi.org/10.1186/s40001-023-01226-z>. PMID: 37481570
 - Shahidi S, Mortazavi M, Bakhtiari MB, et al. Nutritional vitamin D supplementation in chronic hemodialysis: An uncontrolled open-label trial. *J Educ Health Promot*. 2023 Jun 30;12:214. https://doi.org/10.4103/jehp.jehp_1507_22. eCollection 2023. PMID: 37546001
 - Souza CS, Deluque AL, Oliveira BM, et al. Vitamin D deficiency contributes to the diabetic kidney disease progression via increase ZEB1/ZEB2 expressions. *Nutr Diabetes*. 2023 Jul 1;13(1):9. <https://doi.org/10.1038/s41387-023-00238-2>. PMID: 37391399

- Strugnelli SA, Csomor P, Ashfaq A, et al. Evaluation of Therapies for Secondary Hyperparathyroidism Associated with Vitamin D Insufficiency in Chronic Kidney Disease. *Kidney Dis (Basel)*. 2023 Feb 10;9(3):206-217. <https://doi.org/10.1159/000529523>. eCollection 2023 May. PMID: 37497207
 - Tang S, Wu X, Dai Q, et al. Vitamin D receptor attenuate ischemia-reperfusion kidney injury via inhibiting ATF4. *Cell Death Discov*. 2023 May 12;9(1):158. <https://doi.org/10.1038/s41420-023-01456-4>. PMID: 37173347
 - Teumer A, Rebholz CM. A Step Toward Disentangling the Complex Relationship Between Vitamin D and Kidney Function. *J Clin Endocrinol Metab*. 2023 Jul 14;108(8):e640-e641. <https://doi.org/10.1210/clinem/dgad050>. PMID: 36715302
 - Wu W, Li X, Di J, et al. Dietary inflammatory index is associated with Vitamin D in CKD patients. *Int Urol Nephrol*. 2023 Jun 28. <https://doi.org/10.1007/s11255-023-03679-x>. Online ahead of print. PMID: 37378851
 - Yang TA, Chen JY, Lin CA, et al. Sex differences in the association between vitamin D and early-stage chronic kidney disease: A population-based study. *Nutr Res*. 2023 May 20;117:48-55. <https://doi.org/10.1016/j.nutres.2023.05.004>. Online ahead of print. PMID: 37473660
 - Yeung WG, Palmer SC, Strippoli GFM, et al. Vitamin D Therapy in Adults With CKD: A Systematic Review and Meta-analysis. *Am J Kidney Dis*. 2023 Jun 24:S0272-6386(23)00693-5. <https://doi.org/10.1053/j.ajkd.2023.04.003>. Online ahead of print. PMID: 37356648
 - Zhang YH, Xu X, Pi HC, et al. Oral vitamin D supplementation on the prevention of peritoneal dialysis-related peritonitis: A pilot randomised controlled trial. *Perit Dial Int*. 2023 Jul 5;8968608231182885. <https://doi.org/10.1177/08968608231182885>. Online ahead of print. PMID: 37408329
 - Zhao L, Zhu G, Wu L, et al. Effects of vitamin D on inflammatory state in patients with chronic kidney disease: A controversial issue. *Ther Apher Dial*. 2023 Jun;27(3):383-393. <https://doi.org/10.1111/1744-9987.13949>. Epub 2022 Nov 15. PMID: 36345919
- ## NEUROLOGY
- Al-Shammri S, Chattopadhyay A, Hanah MG, et al. Association of Blood Levels of Vitamin D and Its Binding Protein with Clinical Phenotypes of Multiple Sclerosis. *Biomedicine*. 2023 Jun 24;11(7):1808. <https://doi.org/10.3390/biomedicine11071808>. PMID: 37509448
 - Anwar MJ, Alenezi SK, Alhowail AH. Molecular insights into the pathogenic impact of vitamin D deficiency in neurological disorders. *Biomed Pharmacother*. 2023 Jun;162:114718. <https://doi.org/10.1016/j.biopha.2023.114718>. Epub 2023 Apr 20. PMID: 37084561
 - Barmaki O, Mansour A, Moodi M, et al. Serum Vitamin D Status and Cognitive Function in Iranian Older Adults: Evidence from the Birjand Longitudinal Aging Study. *J Nutr*. 2023 Aug;153(8):2312-2319. <https://doi.org/10.1016/j.tjnut.2023.06.033>. Epub 2023 Jun 24. PMID: 37356498
 - Borowicz W, Ptaszkowski K, Ptaszkowska L, et al. Association Between Serum Vitamin D Levels and Physical Outcomes of Patients Who Underwent Rehabilitation Following Ischemic Stroke. *Med Sci Monit*. 2023 May 30;29:e940115. <https://doi.org/10.12659/MSM.940115>. PMID: 37248685
 - Bray NW, Pieruccini-Faria F, Witt ST, et al. Combining exercise with cognitive training and vitamin D3 to improve functional brain connectivity (FBC) in older adults with mild cognitive impairment (MCI). Results from the SYNERGIC trial. *Geroscience*. 2023 Jun;45(3):1967-1985. <https://doi.org/10.1007/s11357-023-00805-6>. Epub 2023 May 10. PMID: 37162700
 - Bytowska ZK, Korewo-Labelle D, Berezka P, et al. Effect of 12-Week BMI-Based Vitamin D3 Supplementation in Parkinson's Disease with Deep Brain Stimulation on Physical Performance, Inflammation, and Vitamin D Metabolites. *Int J Mol Sci*. 2023 Jun 15;24(12):10200. <https://doi.org/10.3390/ijms241210200>. PMID: 37373347
 - Cassard SD, Fitzgerald KC, Qian P, et al. High-dose vitamin D3 supplementation in relapsing-remitting multiple sclerosis: a randomised clinical trial. *EClinicalMedicine*. 2023 Apr 13;59:101957. <https://doi.org/10.1016/j.eclinm.2023.101957>. eCollection 2023 May. PMID: 37125397
 - Chen WY, Cheng YC, Chiu CC, et al. Effects of Vitamin D Supplementation on Cognitive Outcomes: A Systematic Review and Meta-Analysis. *Neuropsychol Rev*. 2023 Jul 7. <https://doi.org/10.1007/s11065-023-09598-z>. Online ahead of print. PMID: 37418225 Review.
 - Dai M, Song Q, Wang X, et al. Combined associations of vitamin D and cognitive function with all-cause mortality among older adults in Chinese longevity areas: A prospective cohort study. *Front Public Health*. 2023 May 2;11:1024341. <https://doi.org/10.3389/fpubh.2023.1024341>. eCollection 2023. PMID: 37206876
 - Dai Y, Wu F, Ni S, et al. Vitamin D receptor gene polymorphisms are associated with the risk and features of myasthenia gravis in the Han Chinese population. *Immunol Res*. 2023 Jun;71(3):404-412. <https://doi.org/10.1007/s12026-022-09349-x>. Epub 2023 Jan 7. PMID: 36609978
 - Daly T. Amyloid- β , vitamin D: why we should triangulate conclusions about therapeutic targets in Alzheimer's disease. *Neurol Sci*. 2023 Sep;44(9):3321-3322. <https://doi.org/10.1007/s10072-023-06840-7>. Epub 2023 May 5. PMID: 37145228
 - Essa SA, Elokda A, Mosaad D, et al. Efficacy of ultraviolet B radiation versus vitamin D3 on postural control and cognitive functions in relapsing-remitting multiple sclerosis: A randomized controlled study. *J Bodyw Mov Ther*. 2023 Jul;35:49-56. <https://doi.org/10.1016/j.jbmt.2023.04.069>. Epub 2023 Apr 17. PMID: 37330802
 - Evlice A, Sanli ZS, Boz PB. The importance of Vitamin-D and Neutrophil-Lymphocyte Ratio for Alzheimer's Disease. *Pak J Med Sci*. 2023 MayJun;39(3):799-803. <https://doi.org/10.12669/pjms.39.3.7024>. PMID: 37250565
 - Fan Y, Huang H, Chen X, et al. Causal effect of vitamin D on myasthenia gravis: a two-sample Mendelian randomization study. *Front Nutr*. 2023 Jul 19;10:1171830. <https://doi.org/10.3389/fnut.2023.1171830>. eCollection 2023. PMID: 37538922
 - Favarin JC, Basotti A, Baptistella AR, et al. Neuroprotective Effect of Vitamin D on Behavioral and Oxidative Parameters of Male and Female Adult Wistar Rats Exposed to Mancozeb (manganese/zinc ethylene bis-dithiocarbamate). *Mol Neurobiol*.

- 2023 Jul;60(7):3724-3740. <https://doi.org/10.1007/s12035-023-03298-8>. Epub 2023 Mar 20. PMID: 36940076
- Feng J, Wang Q, Zhang Y. Ideal vitamin D and handgrip strength counteracts the risk effect of APOE genotype on dementia: a population-based longitudinal study. *J Transl Med*. 2023 May 29;21(1):355. <https://doi.org/10.1186/s12967-023-04195-3>. PMID: 37246226
 - Fleet JL, McIntyre A, Janzen S, et al. A systematic review examining the effect of vitamin D supplementation on functional outcomes post-stroke. *Clin Rehabil*. 2023 May 11:2692155231174599. <https://doi.org/10.1177/02692155231174599>. Online ahead of print. PMID: 37166229
 - Haindl MT, Üçal M, Wonisch W, et al. Vitamin D-An Effective Antioxidant in an Animal Model of Progressive Multiple Sclerosis. *Nutrients*. 2023 Jul 26;15(15):3309. <https://doi.org/10.3390/nu15153309>. PMID: 37571246
 - Hajeer S, Nasr F, Nabha S, et al. Association between vitamin D deficiency and multiple sclerosis- MRI significance: A scoping review. *Heliyon*. 2023 Apr 23;9(5):e15754. <https://doi.org/10.1016/j.heliyon.2023.e15754>. eCollection 2023 May. PMID: 37180903
 - Harse JD, Marriott RJ, Zhu K, et al. Vitamin D status and cognitive performance in community-dwelling adults: A dose-response meta-analysis of observational studies. *Front Neuroendocrinol*. 2023 Jul;70:101080. <https://doi.org/10.1016/j.yfrne.2023.101080>. Epub 2023 Jun 1. PMID: 37268277
 - Inose H, Takahashi T, Matsukura Y, et al. Effect of vitamin D deficiency on surgical outcomes of degenerative cervical myelopathy. *N Am Spine Soc J*. 2023 Jun 28;15:100239. <https://doi.org/10.1016/j.xnsj.2023.100239>. eCollection 2023 Sep. PMID: 37457393
 - López-Muñoz P, Torres-Costoso AI, Fernández-Rodríguez R, et al. Effect of Vitamin D Supplementation on Fatigue in Multiple Sclerosis: A Systematic Review and Meta-Analysis. *Nutrients*. 2023 Jun 24;15(13):2861. <https://doi.org/10.3390/nu15132861>. PMID: 37447189
 - Mancera Alzate JM, Rodríguez Vélez IM. [Vitamin D deficiency in patients with epilepsy: consideration to take into account]. *Nutr Hosp*. 2023 Jun 21. <https://doi.org/10.20960/nh.04737>. Online ahead of print. PMID: 37409727
 - Mirarchi A, Albi E, Beccari T, et al. Microglia and Brain Disorders: The Role of Vitamin D and Its Receptor. *Int J Mol Sci*. 2023 Jul 25;24(15):11892. <https://doi.org/10.3390/ijms241511892>. PMID: 37569267
 - Montero-Odasso M, Zou G, Speechley M, et al. Effects of Exercise Alone or Combined With Cognitive Training and Vitamin D Supplementation to Improve Cognition in Adults With Mild Cognitive Impairment: A Randomized Clinical Trial. *JAMA Netw Open*. 2023 Jul 3;6(7):e2324465. <https://doi.org/10.1001/jamanetworkopen.2023.24465>. PMID: 37471089
 - Pal R, Choudhury S, Kumar H, et al. Vitamin D deficiency and genetic polymorphisms of vitamin D-associated genes in Parkinson's disease. *Eur J Neurosci*. 2023 Jul 24. <https://doi.org/10.1111/ejn.16098>. Online ahead of print. PMID: 37485791
 - Pham H, Waterhouse M, Rahman S, et al. Vitamin D supplementation and cognition-Results from analyses of the D-Health trial. *J Am Geriatr Soc*. 2023 Jun;71(6):1773-1784. <https://doi.org/10.1111/jgs.18247>. Epub 2023 Jan 30. PMID: 36715270
 - Plantone D, Pardini M, Caneva S, et al. Is There a Role of Vitamin D in Alzheimer's disease? *CNS Neurol Disord Drug Targets*. 2023 May 26. <https://doi.org/10.2174/1871527322666230526164421>. Online ahead of print. PMID: 37246320
 - Qiao J, Ma H, Chen M, et al. Vitamin D alleviates neuronal injury in cerebral ischemia-reperfusion via enhancing the Nrf2/HO-1 antioxidant pathway to counteract NLRP3-mediated pyroptosis. *J Neuropathol Exp Neurol*. 2023 Jul 20;82(8):722-733. <https://doi.org/10.1093/jnen/nlad047>. PMID: 37403613
 - Sangha A, Quon M, Pfeffer G, et al. The Role of Vitamin D in Neuroprotection in Multiple Sclerosis: An Update. *Nutrients*. 2023 Jun 30;15(13):2978. <https://doi.org/10.3390/nu15132978>. PMID: 37447304
 - Shea MK, Barger K, Dawson-Hughes B, et al. Brain vitamin D forms, cognitive decline, and neuropathology in community-dwelling older adults. *Alzheimers Dement*. 2023 Jun;19(6):2389-2396. <https://doi.org/10.1002/alz.12836>. Epub 2022 Dec 7. PMID: 36479814
 - Turkmen BO, Can B, Buker S, et al. The effect of vitamin D on neurocognitive functions in older vitamin D deficient adults: a pilot longitudinal interventional study. *Psychogeriatrics*. 2023 Jun 30. <https://doi.org/10.1111/psyg.12997>. Online ahead of print. PMID: 37391231
 - Ye X, Zhou Q, Ren P, et al. The Synaptic and Circuit Functions of Vitamin D in Neurodevelopment Disorders. *Neuropsychiatr Dis Treat*. 2023 Jul 3;19:1515-1530. <https://doi.org/10.2147/NDT.S407731>. eCollection 2023. PMID: 37424961
 - Zhao MY, Dahlen A, Ramirez NJ, et al. Effect of vitamin D supplementation on cerebral blood flow in male patients with adrenoleukodystrophy. *J Neurosci Res*. 2023 Jul;101(7):1086-1097. <https://doi.org/10.1002/jnr.25187>. Epub 2023 Mar 26. PMID: 36967233

OBSTETRICS GYNECOLOGY

- [No authors listed] Expression of concern: "Calcium plus vitamin D supplementation influences biomarkers of inflammation and oxidative stress in overweight and vitamin D-deficient women with polycystic ovary syndrome: A randomized double-blind placebo-controlled clinical trial". *Clin Endocrinol (Oxf)*. 2023 May;98(5):746. <https://doi.org/10.1111/cen.14892>. Epub 2023 Feb 27. PMID: 36852466
- [No authors listed] The effects of vitamin D plus calcium supplementation on metabolic profiles, biomarkers of inflammation, oxidative stress and pregnancy outcomes in pregnant women at risk for preeclampsia. *J Hum Nutr Diet*. 2023 Jun;36(3):1121. <https://doi.org/10.1111/jhn.13156>. Epub 2023 Feb 27. PMID: 36852456
- Alam F, Shahid M, Riffat S, et al. SIRT1 and antioxidants in infertile females: Exploration of the role of vitamin D. *PLoS One*. 2023 Jul 10;18(7):e0287727. <https://doi.org/10.1371/journal.pone.0287727>. eCollection 2023. PMID: 37428803
- Albahlol IA, Neamatallah M, Serria MS, et al. Vitamin D receptor gene polymorphism and polycystic ovary syndrome susceptibility. *BMC Med Genomics*. 2023 May 18;16(1):108. <https://doi.org/10.1186/s12920-023-01541-8>. PMID: 37202765
- Amberntsson A, Bärebring L, Winkvist

- A, et al. Vitamin D intake and determinants of vitamin D status during pregnancy in The Norwegian Mother, Father and Child Cohort Study. *Front Nutr*. 2023 Jun 23;10:1111004. <https://doi.org/10.3389/fnut.2023.1111004>. eCollection 2023. PMID: 37426186
- Amiri M, Rostami M, Sheidaei A, et al. Mode of delivery and maternal vitamin D deficiency: an optimized intelligent Bayesian network algorithm analysis of a stratified randomized controlled field trial. *Sci Rep*. 2023 May 29;13(1):8682. <https://doi.org/10.1038/s41598-023-35838-6>. PMID: 37248326
 - Ashraf M, Khan HN, Ibrahim R, et al. Genetic association of vitamin D receptor gene with female infertility. *Nucleosides Nucleotides Nucleic Acids*. 2023 Jul 26:1-18. <https://doi.org/10.1080/15257770.2023.2236167>. Online ahead of print. PMID: 37496429
 - Aydogmus S, Aydogmus H, Gul S, et al. Is vitamin D replacement effective in the treatment of postpartum urinary incontinence? *Int Urogynecol J*. 2023 May;34(5):1103-1108. <https://doi.org/10.1007/s00192-022-05446-5>. Epub 2023 Jan 16. PMID: 36645442
 - Batur EB, Batur AF. Letter to the editor: Is vitamin D replacement effective in the treatment of postpartum urinary incontinence? *Int Urogynecol J*. 2023 May;34(5):1109. <https://doi.org/10.1007/s00192-023-05493-6>. Epub 2023 Feb 27. PMID: 36847785
 - Chen YC, Chiang YF, Lin YJ, et al. Effect of Vitamin D Supplementation on Primary Dysmenorrhea: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. *Nutrients*. 2023 Jun 21;15(13):2830. <https://doi.org/10.3390/nu15132830>. PMID: 37447156
 - Cheng M, Song Z, Guo Y, et al. 1 α ,25-Dihydroxyvitamin D3 Improves Follicular Development and Steroid Hormone Biosynthesis by Regulating Vitamin D Receptor in the Layers Model. *Curr Issues Mol Biol*. 2023 May 4;45(5):4017-4034. <https://doi.org/10.3390/cimb45050256>. PMID: 37232725
 - Dahma G, Reddy G, Craina M, et al. The Effects of Vitamin D Supplementation before 20 Weeks of Gestation on Preeclampsia: A Systematic Review. *J Pers Med*. 2023 Jun 14;13(6):996. <https://doi.org/10.3390/jpm13060996>. PMID: 37373985
 - Davis S, Lyles E, Shary JR, et al. Post Hoc Analysis of National Institute of Child Health and Human Development Vitamin-D Pregnancy Cohort and The Role of Functional Vitamin-D Deficiency in Pregnancy. *Am J Perinatol*. 2023 Jun 28. <https://doi.org/10.1055/a-2097-2098>. Online ahead of print. PMID: 37216969
 - Donayeva A, Amanzholykyz A, Abdelazim IA, et al. The relation between vitamin D and the adolescents' mid-luteal estradiol and progesterone. *Eur Rev Med Pharmacol Sci*. 2023 Jul;27(14):6792-6799. https://doi.org/10.26355/eur-rev_202307_33150. PMID: 37522690
 - Durá-Travé T, Gallinas-Victoriano F. Pregnancy, Breastfeeding, and Vitamin D. *Int J Mol Sci*. 2023 Jul 25;24(15):11881. <https://doi.org/10.3390/ijms241511881>. PMID: 37569256
 - Gaml-Sørensen A, Brix N, Hærvig KK, et al. Maternal vitamin D levels and male reproductive health: a population-based follow-up study. *Eur J Epidemiol*. 2023 May;38(5):469-484. <https://doi.org/10.1007/s10654-023-00987-5>. Epub 2023 Mar 23. PMID: 36952117
 - Han Y, Cao Q, Qiao X, et al. Effect of vitamin D supplementation on hormones and menstrual cycle regularization in polycystic ovary syndrome women: A systematic review and meta-analysis. *J Obstet Gynaecol Res*. 2023 Jun 26. <https://doi.org/10.1111/jog.15727>. Online ahead of print. PMID: 37364886
 - Kazemi F, Babri S, Keyhanmehr P, et al. Maternal vitamin D supplementation and treadmill exercise attenuated vitamin D deficiency-induced anxiety and depressive-like behaviors in adult male offspring rats. *Nutr Neurosci*. 2023 Jun;26(6):470-482. <https://doi.org/10.1080/1028415X.2022.2059203>. Epub 2022 Apr 26. PMID: 35470763
 - Kim MJ, Kim HM, Cha HH, et al. Analysis of single nucleotide polymorphisms associated with the vitamin D pathway in the placentas of women with gestational diabetes mellitus: a laboratory study. *J Yeungnam Med Sci*. 2023 May 8. <https://doi.org/10.12701/jyms.2023.00150>. Online ahead of print. PMID: 37157780
 - Kirlangic MM, Sade OS, Eraslan Sahin M. Effect of third trimester maternal vitamin D levels on placental weight to birth weight ratio in uncomplicated pregnancies. *J Perinat Med*. 2022 Dec 13;51(5):646-651. <https://doi.org/10.1515/jpm-2022-0432>. Print 2023 Jun 27. PMID: 36508611
 - Lejman-Larysz K, Golara A, Baranowska M, et al. Influence of Vitamin D on the Incidence of Metabolic Syndrome and Hormonal Balance in Patients with Polycystic Ovary Syndrome. *Nutrients*. 2023 Jun 29;15(13):2952. <https://doi.org/10.3390/nu15132952>. PMID: 37447279
 - Li CP, Su HQ, He LP. Vitamin D may alleviate pre-eclampsia by modulating the ferroptosis signalling pathway: A hypothesis based on recent literature. *J Cell Mol Med*. 2023 Jul;27(14):1923-1927. <https://doi.org/10.1111/jcmm.17754>. Epub 2023 Apr 26. PMID: 37099247
 - Liu CC, Huang JP. Potential benefits of vitamin D supplementation on pregnancy. *J Formos Med Assoc*. 2023 Jul;122(7):557-563. <https://doi.org/10.1016/j.jfma.2023.02.004>. Epub 2023 Mar 14. PMID: 36925361
 - Liu Y, He Z, Huang N, et al. Impact of thyroid autoimmunity and vitamin D on in vitro fertilization/intracytoplasmic sperm injection outcomes among women with normal thyroid function. *Front Endocrinol (Lausanne)*. 2023 May 8;14:1098975. <https://doi.org/10.3389/fendo.2023.1098975>. eCollection 2023. PMID: 37223025
 - Lorenzon F, Gregorio T, Niebisch F, et al. Gestational administration of vitamin D improves maternal care and prevents anxiety-like behavior in male and female Wistar rats prenatally exposed to dexamethasone. *Life Sci*. 2023 Aug 1;326:121799. <https://doi.org/10.1016/j.lfs.2023.121799>. Epub 2023 May 26. PMID: 37245838
 - Lumme J, Morin-Papunen L, Pesonen P, et al. Vitamin D Status in Women with a History of Infertility and Decreased Fecundability: A Population-Based Study. *Nutrients*. 2023 May 29;15(11):2522. <https://doi.org/10.3390/nu15112522>. PMID: 37299485
 - Luo LM, Wu N, Zhang J, et al. Maternal vitamin D levels correlate with fetal weight and bone metabolism during pregnancy: a materno-neonatal analysis of bone metabolism parameters. *J Perinat Med*. 2022 Nov 28;51(4):538-545. <https://doi.org/10.1515/jpm-2022-0068>. Print 2023 May 25. PMID: 36435526

- Ma S, Yin W, Wang P, et al. Effect of vitamin D supplementation on glucose control in mid-late gestation: A randomized controlled trial. *Clin Nutr*. 2023 Jun;42(6):929-936. <https://doi.org/10.1016/j.clnu.2023.04.011>. Epub 2023 Apr 14. PMID: 37087832
- Ma Y, Zhang Y, He Q, et al. Vitamin D regulates microflora and ameliorates LPS-induced placental inflammation in rats. *Physiol Genomics*. 2023 Jul 1;55(7):286-296. <https://doi.org/10.1152/physiolgenomics.00004.2023>. Epub 2023 Apr 24. PMID: 37092745
- Maaherra Armstrong P, Augustin H, et al. Prevalence of Vitamin D Insufficiency and Its Determinants among Women Undergoing In Vitro Fertilization Treatment for Infertility in Sweden. *Nutrients*. 2023 Jun 20;15(12):2820. <https://doi.org/10.3390/nu15122820>. PMID: 37375724
- Majid MA, Hassan WN, Ridha AF. Prevalence of 25-Hydroxyvitamin D (Vitamin D) Deficiency in a Group of Infertile Women from Baghdad City. *Biochem Res Int*. 2023 Jun 14;2023:6597730. <https://doi.org/10.1155/2023/6597730>. eCollection 2023. PMID: 37350868
- Mead MJ, McWhorter CA, Rodgers MD, et al. Does maternal vitamin D status influence placental weight or vascular and inflammatory pathology? Secondary analysis from the Kellogg Pregnancy Study. *J Steroid Biochem Mol Biol*. 2023 Jul 4;233:106358. <https://doi.org/10.1016/j.jsbmb.2023.106358>. Online ahead of print. PMID: 37414103
- Mei Z, Hu H, Zou Y, et al. The role of vitamin D in menopausal women's health. *Front Physiol*. 2023 Jun 12;14:1211896. <https://doi.org/10.3389/fphys.2023.1211896>. eCollection 2023. PMID: 37378077
- Mohan A, Haider R, Fakhor H, et al. Vitamin D and polycystic ovary syndrome (PCOS): a review. *Ann Med Surg (Lond)*. 2023 Jun 5;85(7):3506-3511. <https://doi.org/10.1097/MS9.0000000000000879>. eCollection 2023 Jul. PMID: 37427232
- Mumena WA, Hanbazaza MA. Predictors of Maternal Knowledge, Attitude, and Practices Toward Vitamin D Supplements in Saudi Infants and Toddlers. *Matern Child Health J*. 2023 May;27(5):805-814. <https://doi.org/10.1007/s10995-023-03612-9>. Epub 2023 Feb 18. PMID: 36807236
- Nakajima H, Sakamoto Y, Honda Y, et al. Estimation of the vitamin D (VD) status of pregnant Japanese women based on food intake and VD synthesis by solar UV-B radiation using a questionnaire and UV-B observations. *J Steroid Biochem Mol Biol*. 2023 May;229:106272. <https://doi.org/10.1016/j.jsbmb.2023.106272>. Epub 2023 Feb 10. PMID: 36775044
- Nandakumar M, Sathyapalan T, Butler AE, et al. Oxidative Stress Markers and Heat Shock Proteins in Non-Obese Women with Polycystic Ovary Syndrome Are Not Elevated and Show No Correlation with Vitamin D. *Biomedicine*. 2023 Jul 20;11(7):2044. <https://doi.org/10.3390/biomedicine11072044>. PMID: 37509682
- Nema J, Wadhvani N, Randhir K, et al. Association of maternal vitamin D status with the risk of preeclampsia. *Food Funct*. 2023 May 22;14(10):4859-4865. <https://doi.org/10.1039/d3fo00007a>. PMID: 37129568
- Nowak A, Wojtowicz M, Baranski K, et al. The correlation of vitamin D level with body mass index in women with PCOS. *Ginekol Pol*. 2023 May 10. <https://doi.org/10.5603/GP.a2023.0037>. Online ahead of print. PMID: 37162141
- Octavius GS, Daleni VA, Angeline G, et al. A systematic review and meta-analysis of prevalence of vitamin D deficiency among Indonesian pregnant women: a public health emergency. *AJOG Glob Rep*. 2023 Mar 12;3(2):100189. <https://doi.org/10.1016/j.xagr.2023.100189>. eCollection 2023 May. PMID: 37234813
- Purdue-Smithe AC, Langton CR, Manson JE. Vitamin D status during pregnancy: a role in intergenerational reproductive health? *Eur J Epidemiol*. 2023 May;38(5):465-467. <https://doi.org/10.1007/s10654-023-01011-6>. Epub 2023 Apr 25. PMID: 37148409
- Rios-Leyvraz M, Yao Q. Calcium, zinc, and vitamin D in breast milk: a systematic review and meta-analysis. *Int Breastfeed J*. 2023 Jun 1;18(1):27. <https://doi.org/10.1186/s13006-023-00564-2>. PMID: 37264448
- Roussev BH, Salim AS, Nenkova GT, et al. Effect of vitamin D metabolites and gene expression of vitamin D receptor, and 1-alpha-hydroxylase related to the sperm quality. *Reprod Domest Anim*. 2023 Jun 30. <https://doi.org/10.1111/rda.14421>. Online ahead of print. PMID: 37386932
- Saidi L, Hammou H, Sicard F, et al. Maternal vitamin D deficiency and brain functions: a never-ending story. *Food Funct*. 2023 Jul 17;14(14):6290-6301. <https://doi.org/10.1039/d3fo00166k>. PMID: 37350315 Review.
- Sarebani Z, Chegini V, Chen H, et al. Effect of vitamin D vaginal suppository on sexual functioning among postmenopausal women: A three-arm randomized controlled clinical trial. *Obstet Gynecol Sci*. 2023 May;66(3):208-220. <https://doi.org/10.5468/ogs.22038>. Epub 2023 Feb 24. PMID: 36825329
- Shadid IL, Brustad N, Lu M, et al. The Impact of Baseline 25-Hydroxyvitamin D Level and Gestational Age on Prenatal Vitamin D Supplementation to Prevent Offspring Asthma or Recurrent Wheezing. *Am J Clin Nutr*. 2023 Jun;117(6):1342-1352. <https://doi.org/10.1016/j.ajcnut.2023.04.019>. Epub 2023 Apr 17. PMID: 37075847
- Sharma A, Yu Y, Lu J, et al. The Impact of Maternal Probiotics on Intestinal Vitamin D Receptor Expression in Early Life. *Biomolecules*. 2023 May 16;13(5):847. <https://doi.org/10.3390/biom13050847>. PMID: 37238716
- Simpson S, Pal L. Vitamin D and infertility. *Curr Opin Obstet Gynecol*. 2023 Aug 1;35(4):300-305. <https://doi.org/10.1097/GCO.0000000000000887>. Epub 2023 May 19. PMID: 37266579
- Sobczak M, Pawliczak R. Relationship between vitamin D and asthma from gestational to adulthood period: a meta-analysis of randomized clinical trials. *BMC Pulm Med*. 2023 Jun 17;23(1):212. <https://doi.org/10.1186/s12890-023-02514-4>. PMID: 37330474
- Tahsin T, Khanam R, Chowdhury NH, et al. Vitamin D deficiency in pregnancy and the risk of preterm birth: a nested case-control study. *BMC Pregnancy Childbirth*. 2023 May 6;23(1):322. <https://doi.org/10.1186/s12884-023-05636-z>. PMID: 37149566
- Tuo LJ, Song XY, Zhu YY, et al. Gestational

- folic acid supplement prevents vitamin D deficiency-induced depression-like behavior by reversing cortical DNA hypomethylation in adult offspring. *J Steroid Biochem Mol Biol.* 2023 Jul;231:106313. <https://doi.org/10.1016/j.jsbmb.2023.106313>. Epub 2023 Apr 17. PMID: 37075986
- Wang R, Zhu X, Zhang X, et al. Association of vitamin D and polymorphisms of its receptor with antiviral therapy in pregnant women with hepatitis B. *World J Gastroenterol.* 2023 May 21;29(19):3003-3012. <https://doi.org/10.3748/wjg.v29.i19.3003>. PMID: 37274802
 - Xu QH, Muyayalo KP, Zhang YJ, et al. Altered vitamin D metabolism is involved in the dysregulation of $\gamma\delta$ T cell function and their crosstalk with trophoblasts in recurrent pregnancy loss. *Am J Reprod Immunol.* 2023 Jun;89(6):e13581. <https://doi.org/10.1111/ajri.13581>. Epub 2022 Jul 1. PMID: 35704547
 - Yuan C, Xiang L, Jian Z, et al. Vitamin D Levels and Risk of Male Factor Infertility: A Mendelian Randomization Study. *World J Mens Health.* 2023 Jul;41(3):640-648. <https://doi.org/10.5534/wjmh.220109>. Epub 2023 Jan 1. PMID: 36593707
- ## ONCOLOGY
- Ahn JH, Choi H, Kim SJ, et al. The association between vitamin D supplementation and the long-term prognosis of differentiated thyroid cancer patients: a retrospective observational cohort study with propensity score matching. *Front Endocrinol (Lausanne).* 2023 Jun 13;14:1163671. <https://doi.org/10.3389/fendo.2023.1163671>. eCollection 2023. PMID: 37383396
 - Arayici ME, Basbınar Y, Ellidokuz H. Vitamin D Intake, Serum 25-Hydroxyvitamin-D (25(OH)D) Levels, and Cancer Risk: A Comprehensive Meta-Analysis Including Meta-Analyses of Randomized Controlled Trials and Observational Epidemiological Studies. *Nutrients.* 2023 Jun 12;15(12):2722. <https://doi.org/10.3390/nu15122722>. PMID: 37375626
 - Avila E, Noriega-Mejía BJ, González-Macías J, et al. The Preventive Role of the Vitamin D Endocrine System in Cervical Cancer. *Int J Mol Sci.* 2023 May 12;24(10):8665. <https://doi.org/10.3390/ijms24108665>. PMID: 37240017
 - Bingol Ozakpinar O, Dastan H, et al. Carbon Nanofiber-Sodium Alginate Composite Aerogels Loaded with Vitamin D: The Cytotoxic and Apoptotic Effects on Colon Cancer Cells. *Gels.* 2023 Jul 10;9(7):561. <https://doi.org/10.3390/gels9070561>. PMID: 37504440
 - Boot IWA, Wesselius A, Yu EYV, et al. Dietary vitamin D intake and the bladder cancer risk: A pooled analysis of prospective cohort studies. *Clin Nutr.* 2023 Aug;42(8):1462-1474. <https://doi.org/10.1016/j.clnu.2023.05.010>. Epub 2023 May 22. PMID: 37321901
 - Capobianco E, McGaughey V, Seraphin G, et al. Vitamin D inhibits osteosarcoma by reprogramming nonsense-mediated RNA decay and SNAI2-mediated epithelial-to-mesenchymal transition. *Front Oncol.* 2023 May 9;13:1188641. <https://doi.org/10.3389/fonc.2023.1188641>. eCollection 2023. PMID: 37228489
 - Chakraborty M, Arora M, Ramteke A, et al. FokI polymorphism of Vitamin D receptor gene and deficiency of serum Vitamin D increases the risk of breast cancer in North Indian women. *Endocrine.* 2023 Jul;81(1):168-174. <https://doi.org/10.1007/s12020-023-03334-6>. Epub 2023 Mar 1. PMID: 36854857
 - Chen B, Diallo MT, Ma Y, et al. The association of vitamin D and digestive system cancers: a comprehensive Mendelian randomization study. *J Cancer Res Clin Oncol.* 2023 Jul 21. <https://doi.org/10.1007/s00432-023-05140-z>. Online ahead of print. PMID: 37479757
 - Chen S, Li S, Li H, et al. Effect of polycyclic aromatic hydrocarbons on cancer risk causally mediated via vitamin D levels. *Environ Toxicol.* 2023 Sep;38(9):2111-2120. <https://doi.org/10.1002/tox.23835>. Epub 2023 May 20. PMID: 37209380
 - de Oliveira CS, Baptistella MM, Siqueira AP, et al. Combination of vitamin D and probiotics inhibits chemically induced colorectal carcinogenesis in Wistar rats. *Life Sci.* 2023 Jun 1;322:121617. <https://doi.org/10.1016/j.lfs.2023.121617>. Epub 2023 Mar 30. PMID: 37003542
 - Dennis C, Dillon J, Cohen DJ, et al. Local production of active vitamin D3 metabolites in breast cancer cells by CYP24A1 and CYP27B1. *J Steroid Biochem Mol Biol.* 2023 May 25;232:106331. <https://doi.org/10.1016/j.jsbmb.2023.106331>. Online ahead of print. PMID: 37244301
 - Galus Ł, Michalak M, Lorenz M, et al. Vitamin D supplementation increases objective response rate and prolongs progression-free time in patients with advanced melanoma undergoing anti-PD-1 therapy. *Cancer.* 2023 Jul 1;129(13):2047-2055. <https://doi.org/10.1002/cncr.34718>. Epub 2023 Apr 24. PMID: 37089083
 - Gharagozloo M, Jahanian Sadatmahalleh S, Kalhor M, et al. Evaluation of the relationship between vitamin D levels with oocyte quality in breast cancer women: a cross-sectional study. *Sci Rep.* 2023 Jul 26;13(1):12083. <https://doi.org/10.1038/s41598-023-39341-w>. PMID: 37495647
 - Gibbs DC, Thomas NE, Kanetsky PA, et al. Association of functional, inherited vitamin D-binding protein variants with melanoma-specific death. *JNCI Cancer Spectr.* 2023 Jul 26:pkad051. <https://doi.org/10.1093/jncics/pkad051>. Online ahead of print. PMID: 37494457
 - Grant WB. Comments on "Association of calcium and vitamin D supplementation with cancer incidence and cause-specific mortality in Black women: Extended follow-up of the Women's Health Initiative calcium-vitamin D trial". *Int J Cancer.* 2023 Jul 15;153(2):450-451. <https://doi.org/10.1002/ijc.34502>. Epub 2023 Mar 17. PMID: 36897021
 - Guyonnet E, Kim SJ, Pulella K, et al. Vitamin D and Calcium Supplement Use and High-Risk Breast Cancer: A Case-Control Study among BRCA1 and BRCA2 Mutation Carriers. *Cancers (Basel).* 2023 May 17;15(10):2790. <https://doi.org/10.3390/cancers15102790>. PMID: 37345127
 - Gwenzi T, Schrotz-King P, Schöttker B, et al. Vitamin D Status, Cdx2 Genotype, and Colorectal Cancer Survival: Population-Based Patient Cohort. *Nutrients.* 2023 Jun 12;15(12):2717. <https://doi.org/10.3390/nu15122717>. PMID: 37375621
 - Gwenzi T, Zhu A, Schrotz-King P, et al. Effects of vitamin D supplementation on inflammatory response in patients with cancer and precancerous lesions: Systematic review and meta-analysis of randomized trials. *Clin Nutr.* 2023 Jul;42(7):1142-1150. <https://doi.org/10.1016/j.clnu.2023.05.009>. Epub 2023 May 17. PMID: 37244755

- Hung M, Almpiani K, Thao B, et al. Vitamin D in the Prevention and Treatment of Oral Cancer: A Scoping Review. *Nutrients*. 2023 May 17;15(10):2346. <https://doi.org/10.3390/nu15102346>. PMID: 37242229
- Iqbal MUN, Maqbool SA, Khan TA. Associations of vitamin D receptor encoding gene variants with premenopausal breast cancer risk. *Am J Hum Biol*. 2023 Jun;35(6):e23865. <https://doi.org/10.1002/ajhb.23865>. Epub 2023 Jan 16. PMID: 36645723
- Jung S, Jin S, Je Y. Vitamin D Intake, Blood 25-Hydroxyvitamin D, and Risk of Ovarian Cancer: A Meta-Analysis of Observational Studies. *J Womens Health (Larchmt)*. 2023 May;32(5):561-573. <https://doi.org/10.1089/jwh.2022.0432>. Epub 2023 Mar 16. PMID: 36930144
- Kamiya S, Nakamori Y, Takasawa A, et al. Suppression of the vitamin D metabolizing enzyme CYP24A1 provides increased sensitivity to chemotherapeutic drugs in breast cancer. *Oncol Rep*. 2023 May;49(5):85. <https://doi.org/10.3892/or.2023.8522>. Epub 2023 Mar 17. PMID: 36928289
- Kamiya S, Nakamori Y, Takasawa A, et al. Vitamin D metabolism in cancer: potential feasibility of vitamin D metabolism blocking therapy. *Med Mol Morphol*. 2023 Jun;56(2):85-93. <https://doi.org/10.1007/s00795-023-00348-x>. Epub 2023 Feb 7. PMID: 36749415 Review
- Kato I, Larson JC. Reply to: Comments on "Association of calcium and vitamin D supplementation with cancer incidence and cause-specific mortality in Black women: Extended follow-up of the Women's Health Initiative calcium-vitamin D trial". *Int J Cancer*. 2023 Jul 15;153(2):452-453. <https://doi.org/10.1002/ijc.34501>. Epub 2023 Mar 17. PMID: 36897025
- Khazan N, Quarato ER, Singh NA, et al. Vitamin D Receptor Antagonist MeTC7 Inhibits PD-L1. *Cancers (Basel)*. 2023 Jun 30;15(13):3432. <https://doi.org/10.3390/cancers15133432>. PMID: 37444542
- Kim H, Yuan C, Nguyen LH, et al. Prediagnostic Vitamin D Status and Colorectal Cancer Survival by Vitamin D Binding Protein Isoforms in US Cohorts. *J Clin Endocrinol Metab*. 2023 May 17;108(6):e223-e229. <https://doi.org/10.1210/clinem/dgac742>. PMID: 36550068
- Kuznia S, Zhu A, Akutsu T, et al. Efficacy of vitamin D3 supplementation on cancer mortality: Systematic review and individual patient data meta-analysis of randomised controlled trials. *Ageing Res Rev*. 2023 Jun;87:101923. <https://doi.org/10.1016/j.arr.2023.101923>. Epub 2023 Mar 31. PMID: 37004841
- Li J, Qin S, Zhang S, et al. Serum vitamin D concentration, vitamin D-related polymorphisms, and colorectal cancer risk. *Int J Cancer*. 2023 Jul 15;153(2):278-289. <https://doi.org/10.1002/ijc.34521>. Epub 2023 Mar 29. PMID: 36946647
- Li Q, Chan H, Liu WX, et al. *Carnobacterium maltaromaticum* boosts intestinal vitamin D production to suppress colorectal cancer in female mice. *Cancer Cell*. 2023 Jul 14:S1535-6108(23)00236-2. <https://doi.org/10.1016/j.ccell.2023.06.011>. Online ahead of print. PMID: 37478851
- Malekzadeh A, Kharati-Kopaei M. Simultaneous confidence intervals for quantile differences of several heterogeneous normal populations: With application to vitamin D supplement treatment on colorectal cancer patients. *Biom J*. 2023 Jun;65(5):e2200083. <https://doi.org/10.1002/bimj.202200083>. Epub 2023 Mar 17. PMID: 36928645
- Manocha A, Brockton NT, Cook L, et al. Low Serum Vitamin D Associated With Increased Tumor Size and Higher Grade in Premenopausal Canadian Women With Breast Cancer. *Clin Breast Cancer*. 2023 Aug;23(6):e368-e376. <https://doi.org/10.1016/j.clbc.2023.06.003>. Epub 2023 Jun 14. PMID: 37357130
- Martin-Moreno JM, Martin-Gorgojo A. "The Role of Vitamin D in Cancer Prevention": Some New Clues on a Fascinating Subject. *Nutrients*. 2023 May 30;15(11):2560. <https://doi.org/10.3390/nu15112560>. PMID: 37299523
- Mohamed RF, Barakat DBS, Eid S, et al. Low baseline vitamin D levels increase the risk of bone metastases among females with breast cancer - Hospital based cohort study. *Cancer Epidemiol*. 2023 Aug;85:102374. <https://doi.org/10.1016/j.canep.2023.102374>. Epub 2023 May 4. PMID: 37148827
- Ottaiano A, Facchini S, Santorsola M, et al. Circulating Vitamin D Level and Its Impact on Mortality and Recurrence in Stage III Colorectal Cancer Patients: A Systematic Review and Meta-Analysis. *Cancers (Basel)*. 2023 May 31;15(11):3012. <https://doi.org/10.3390/cancers15113012>. PMID: 37296974
- Seraphin G, Rieger S, Hewison M, et al. The impact of vitamin D on cancer: A mini review. *J Steroid Biochem Mol Biol*. 2023 Jul;231:106308. <https://doi.org/10.1016/j.jsbmb.2023.106308>. Epub 2023 Apr 11. PMID: 37054849
- Serrano D, Bellerba F, Johansson H, et al. Vitamin D Supplementation and Adherence to World Cancer Research Fund (WCRF) Diet Recommendations for Colorectal Cancer Prevention: A Nested Prospective Cohort Study of a Phase II Randomized Trial. *Biomedicine*. 2023 Jun 20;11(6):1766. <https://doi.org/10.3390/biomedicine11061766>. PMID: 37371861
- Sha S, Chen LJ, Brenner H, et al. Associations of 25-hydroxyvitamin D status and vitamin D supplementation use with mortality due to 18 frequent cancer types in the UK Biobank cohort. *Eur J Cancer*. 2023 Jul 17;191:113241. <https://doi.org/10.1016/j.ejca.2023.113241>. Online ahead of print. PMID: 37549530
- Shabanian S, Rozbeh A, Mohammadi B, et al. The association between Vitamin D deficiency and fibrocystic breast disorder. *Curr Mol Med*. 2023 Jun 23. <https://doi.org/10.2174/1566524023666230623155659>. Online ahead of print. PMID: 37357512
- Shahmohammadi M, Hajimohammadebrahim-Ketabforoush M, Shariatpanahi ZV. Optimal vitamin D status at admission appears to improve survival after craniotomy in patients with brain malignancies. *Clin Nutr ESPEN*. 2023 Jun;55:428-433. <https://doi.org/10.1016/j.clnesp.2023.04.009>. Epub 2023 Apr 15. PMID: 37202079
- Shellenberger RA, Gowda S, Kurn H, et al. Vitamin D insufficiency and serum levels related to the incidence and stage of cutaneous melanoma: a systematic review and meta-analysis. *Melanoma Res*. 2023 Aug 1;33(4):265-274. <https://doi.org/10.1097/CMR.0000000000000897>. Epub 2023 May 18. PMID: 37199748
- Starska-Kowarska K. Role of Vitamin D in Head and Neck Cancer-Immune Function, Anti-Tumour Effect, and Its Impact

- on Patient Prognosis. *Nutrients*. 2023 May 31;15(11):2592. <https://doi.org/10.3390/nu15112592>. PMID: 37299554
- Sutandyo N, Cintakaweni DMW, Setiawan L, et al. Association of Body Composition and Handgrip Strength with Interleukin-6 (IL-6) and Vitamin D Level in Cancer Patients. *Int J Gen Med*. 2023 May 23;16:1995-2001. <https://doi.org/10.2147/IJGM.S388457>. eCollection 2023. PMID: 37251283
 - Törzsök P, Van Goubergen J, Pichler M, et al. Isochromosome 12p Formation Regulates Vitamin D Metabolism in Testicular Cancer. *Nutrients*. 2023 May 19;15(10):2384. <https://doi.org/10.3390/nu15102384>. PMID: 37242266
 - Tuttis K, Machado ART, Santos PWDS, et al. Sulforaphane Combined with Vitamin D Induces Cytotoxicity Mediated by Oxidative Stress, DNA Damage, Autophagy, and JNK/MAPK Pathway Modulation in Human Prostate Tumor Cells. *Nutrients*. 2023 Jun 14;15(12):2742. <https://doi.org/10.3390/nu15122742>. PMID: 37375646
 - Wei D, Wang L, Liu Y, et al. Activation of Vitamin D/VDR Signaling Reverses Gemcitabine Resistance of Pancreatic Cancer Cells Through Inhibition of MUC1 Expression. *Dig Dis Sci*. 2023 Jul;68(7):3043-3058. <https://doi.org/10.1007/s10620-023-07931-3>. Epub 2023 Apr 18. PMID: 37071246
 - You W, Liu X, Tang H, et al. Vitamin D Status Is Associated With Immune Checkpoint Inhibitor Efficacy and Immune-related Adverse Event Severity in Lung Cancer Patients: A Prospective Cohort Study. *J Immunother*. 2023 Jul-Aug 01;46(6):236-243. <https://doi.org/10.1097/CJI.0000000000000469>. Epub 2023 May 16. PMID: 37184520
 - Zhao X, Wang J, Zou L. Vitamin D and gastric cancer - A systematic review and meta-analysis. *Nutr Hosp*. 2023 Jun 13. <https://doi.org/10.20960/nh.04410>. Online ahead of print. PMID: 37334809
 - org/10.1210/clinem/dgad323. Online ahead of print. PMID: 37303283
 - Abu-Elnasr Awwad A, Hasan RA, Hablas MGA, et al. Impact of vitamin D in children with chronic tonsillitis (immunohistochemical study of CD68 polarisation and proinflammatory cytokines estimation). *Sci Rep*. 2023 May 17;13(1):8014. <https://doi.org/10.1038/s41598-023-33970-x>. PMID: 37198277
 - Ageeru K, Mendu SB, Avinash S, et al. Serum Vitamin D Levels in Pediatric Tuberculosis Patients in a Tertiary Care Center in India: A Case-Control Study. *Cureus*. 2023 Jun 4;15(6):e39937. <https://doi.org/10.7759/cureus.39937>. eCollection 2023 Jun. PMID: 37409212
 - Al-Qudah SA, Abu-Hussein LAA, Al Sbaili S. Maternal Awareness of Vitamin D Deficiency in Infants and Children Up to the Age of 6 Years: A Cross-sectional Study in Jordan. *Clin Pediatr (Phila)*. 2023 May 19;99228231175228. <https://doi.org/10.1177/00099228231175228>. Online ahead of print. PMID: 37204118
 - Amberntsson A, Bärebring L, Winkvist A, et al. Maternal vitamin D status and risk of childhood overweight at 5 years of age in two Nordic cohort studies. *Front Nutr*. 2023 Jul 26;10:1201171. <https://doi.org/10.3389/fnut.2023.1201171>. eCollection 2023. PMID: 37565036
 - And Alternative Medicine EC. Retracted: Effects of Routine Health Care Combined with Oral Vitamin D on Linear Growth in 5-Year-Old Children. *Evid Based Complement Alternat Med*. 2023 Jun 21;2023:9896851. <https://doi.org/10.1155/2023/9896851>. eCollection 2023. PMID: 37387883
 - And Alternative Medicine EC. Retracted: Intensive Health Care plus Vitamin D Administration Benefits the Growth and Development of Young Children and Reduces the Incidence of Nutritional Disorders. *Evid Based Complement Alternat Med*. 2023 Jun 21;2023:9851602. <https://doi.org/10.1155/2023/9851602>. eCollection 2023. PMID: 37387825
 - Aslan E, Sert A, Buyukinan M, et al. Left and right ventricular function by echocardiography, tissue doppler imaging, carotid intima media thickness, and asymmetric dimethylarginine levels in female adolescents with vitamin D deficiency. *Cardiol Young*. 2023 May 25:1-8. <https://doi.org/10.1017/S1047951123001257>. Online ahead of print. PMID: 37226488
 - Buendía JA, Patino DG, Lindarte EF. Effectiveness of high-dose vitamin D supplementation to reduce the incidence rate of repeat episodes of pneumonia in children: A systematic review. *Pediatr Pulmonol*. 2023 Jul 5. <https://doi.org/10.1002/ppul.26585>. Online ahead of print. PMID: 37403822
 - Cabalín C, Pérez-Mateluna G, Iturriaga C, et al. Oral vitamin D modulates the epidermal expression of the vitamin D receptor and cathelicidin in children with atopic dermatitis. *Arch Dermatol Res*. 2023 May;315(4):761-770. <https://doi.org/10.1007/s00403-022-02416-1>. Epub 2022 Oct 22. PMID: 36273083
 - Calcaterra V, Magenes VC, Tagi VM, et al. Association between Vitamin D Levels, Puberty Timing, and Age at Menarche. *Children (Basel)*. 2023 Jul 19;10(7):1243. <https://doi.org/10.3390/children10071243>. PMID: 37508740
 - Caliskan M, Dabak M, Tumer KC. The relationship between serum cytokine profile and vitamin D in calves with neonatal diarrhea. *Cytokine*. 2023 May;165:156173. <https://doi.org/10.1016/j.cyto.2023.156173>. Epub 2023 Mar 16. PMID: 36933398
 - Cantio E, Bilenberg N, Nørgaard SM, et al. Vitamin D status in pregnancy and childhood associates with intelligence quotient at age 7 years: An Odense child cohort study. *Aust N Z J Psychiatry*. 2023 Jul;57(7):1062-1072. <https://doi.org/10.1177/00048674221116027>. Epub 2022 Aug 15. PMID: 35971641
 - Carboo JA, Dolman-Macleod RC, Malan L, et al. High-dose oral vitamin D supplementation for prevention of infections in children aged 0 to 59 months: a systematic review and meta-analysis. *Nutr Rev*. 2023 Jul 10:nuad082. <https://doi.org/10.1093/nutrit/nuad082>. Online ahead of print. PMID: 37428896
 - Chongthavornvasana S, Lertudomphonwanit C, Mahachoklertwattana P, et al. Determination of Optimal Vitamin D Dosage in Children with Cholestasis. *BMC Pediatr*. 2023 Jun 21;23(1):313. <https://doi.org/10.1186/s12887-023-04113-y>. PMID: 37344793
 - Coccia F, Pietrobelli A, Zoller T, et al. Vitamin D and Osteogenesis Imperfecta in Pedi-

PEDIATRICS

- [No authors listed] Correction to "High-Dose Vitamin D Intervention in Infants-Effects on Vitamin D Status, Calcium Homeostasis, and Bone Strength". *J Clin Endocrinol Metab*. 2023 Jun 12:dgad323. <https://doi.org/10.1210/clinem/dgad323>.

- atrics. Pharmaceuticals (Basel). 2023 May 3;16(5):690. <https://doi.org/10.3390/ph16050690>. PMID: 37242473
- Corsello A, Macchi M, D'Oria V, et al. Effects of vitamin D supplementation in obese and overweight children and adolescents: A systematic review and meta-analysis. *Pharmacol Res.* 2023 Jun;192:106793. <https://doi.org/10.1016/j.phrs.2023.106793>. Epub 2023 May 11. PMID: 37178775
 - D Al-Mendalawi M. Comment On: Serum Vitamin D Levels in Children and Adolescents with Vasovagal Syncope, Syncope due to Orthostatic Hypotension, and Cardiac Syncope. *Turk Arch Pediatr.* 2023 Jul;58(4):454-455. <https://doi.org/10.5152/TurkArchPediatr.2023.23037>. PMID: 37317578
 - De Marzio M, Lasky-Su J, Chu SH, et al. The metabolic role of vitamin D in children's neurodevelopment: a network study. *bioRxiv.* 2023 Jul 15:2023.06.23.546277. <https://doi.org/10.1101/2023.06.23.546277>. Preprint. PMID: 37425858
 - Deruyter S, Van Biervliet S, De Guchteneere A. Response to vitamin D replacement therapy in obese children and adolescents with vitamin D deficiency: a randomized controlled trial. *J Pediatr Endocrinol Metab.* 2023 Mar 13;36(5):458-465. <https://doi.org/10.1515/jpem-2022-0598>. Print 2023 May 25. PMID: 36913250
 - Doumat G, Mehta GD, Mansbach JM, et al. Association between Early Childhood Vitamin D Status and Age 6-Year Lung Function among Children with a History of Severe Bronchiolitis in Infancy. *Nutrients.* 2023 May 19;15(10):2379. <https://doi.org/10.3390/nu15102379>. PMID: 37242262
 - El Shiekh MA, Hanafy RMH. Relationship between vitamin D status and caries experience in a group of Egyptian children: a cross-sectional study. *BMC Oral Health.* 2023 Jun 9;23(1):374. <https://doi.org/10.1186/s12903-023-03065-0>. PMID: 37296472
 - Fang Q, Wu Y, Lu J, et al. A meta-analysis of the association between vitamin D supplementation and the risk of acute respiratory tract infection in the healthy pediatric group. *Front Nutr.* 2023 Jun 20;10:1188958. <https://doi.org/10.3389/fnut.2023.1188958>. eCollection 2023. PMID: 37408991
 - Fayoumi T, Gari A, Alarawi M, et al. A Retrospective Study on Vitamin D Status and Its Association With Cardiometabolic Risk Factors Among Children With Chronic Kidney Disease at King Abdulaziz University Hospital. *Cureus.* 2023 May 22;15(5):e39340. <https://doi.org/10.7759/cureus.39340>. eCollection 2023 May. PMID: 37351236
 - Filiou A, Hoyer A, Holmdahl I, et al. Vitamin D receptor genetic variant associated with asthma in Swedish school-children. *Clin Exp Allergy.* 2023 May 29. <https://doi.org/10.1111/cea.14349>. Online ahead of print. PMID: 37246605
 - Fisher M, Marro L, Arbuckle TE, et al. Association between toxic metals, vitamin D and preterm birth in the Maternal-Infant research on environmental chemicals study. *Paediatr Perinat Epidemiol.* 2023 Jul;37(5):447-457. <https://doi.org/10.1111/ppe.12962>. Epub 2023 Mar 2. PMID: 36864001
 - Flores-Aldana M, Rivera-Pasquel M, García-Guerra A, et al. Effect of Vitamin D Supplementation on (25(OH)D) Status in Children 12-30 Months of Age: A Randomized Clinical Trial. *Nutrients.* 2023 Jun 15;15(12):2756. <https://doi.org/10.3390/nu15122756>. PMID: 37375660
 - Fu L, Wong BYL, Li Z, et al. Genetic variants in the vitamin D pathway and their association with vitamin D metabolite levels: Detailed studies of an inner-city pediatric population suggest a modest but significant effect in early childhood. *J Steroid Biochem Mol Biol.* 2023 Jul 23;233:106369. <https://doi.org/10.1016/j.jsbmb.2023.106369>. Online ahead of print. PMID: 37490983
 - Gaml-Sørensen A, Brix N, Ernst A, et al. The estimated effect of season and vitamin D in the first trimester on pubertal timing in girls and boys: a cohort study and an instrumental variable analysis. *Int J Epidemiol.* 2023 May 13:dyad060. <https://doi.org/10.1093/ije/dyad060>. Online ahead of print. PMID: 37178177
 - Gan Y, You S, Ying J, et al. The Association between Serum Vitamin D Levels and Urinary Tract Infection Risk in Children: A Systematic Review and Meta-Analysis. *Nutrients.* 2023 Jun 9;15(12):2690. <https://doi.org/10.3390/nu15122690>. PMID: 37375601
 - Ganmaa D, Khudyakov P, Buyanjargal U, et al. Influence of vitamin D supplementation on fracture risk, bone mineral density and bone biochemistry in Mongolian school-children: multicenter double-blind randomized placebo-controlled trial. *medRxiv.* 2023 May 19:2023.05.18.23290181. <https://doi.org/10.1101/2023.05.18.23290181>. Preprint. PMID: 37292864
 - Gora A, Singh P, Debnath E, et al. Daily vs. monthly oral vitamin D3 for treatment of symptomatic vitamin D deficiency in infants: a randomized controlled trial. *J Pediatr Endocrinol Metab.* 2023 May 18;36(7):683-691. <https://doi.org/10.1515/jpem-2023-0146>. Print 2023 Jul 26. PMID: 37192500
 - Gülşen M, Özçay F, Barış Z, et al. Evaluation of Vitamin D Levels in Children With Liver Transplant. *Exp Clin Transplant.* 2023 Jul 12. <https://doi.org/10.6002/ect.2023.0075>. Online ahead of print. PMID: 37486032
 - Jamali Z, Ghorbani F, Shafie'ei M, et al. Risk factors associated with vitamin D deficiency in preterm neonates: a single-center step-wise regression analysis. *BMC Pediatr.* 2023 Jun 26;23(1):324. <https://doi.org/10.1186/s12887-023-04088-w>. PMID: 37365549
 - Joshi M, Uday S. Vitamin D Deficiency in Chronic Childhood Disorders: Importance of Screening and Prevention. *Nutrients.* 2023 Jun 19;15(12):2805. <https://doi.org/10.3390/nu15122805>. PMID: 37375708
 - Karagol C, Duyan Camurdan A. Evaluation of vitamin D levels and affecting factors of vitamin D deficiency in healthy children 0-18 years old. *Eur J Pediatr.* 2023 Jul 10. <https://doi.org/10.1007/s00431-023-05096-9>. Online ahead of print. PMID: 37428244
 - Karkenny AJ, Avarello J, Hanstein R, et al. Pediatric Fractures: Does Vitamin D Play a Role? *J Pediatr Orthop.* 2023 Sep 1;43(8):492-497. <https://doi.org/10.1097/BPO.0000000000002462>. Epub 2023 Jun 28. PMID: 37390504
 - Kharal N, Kadel A, Sapkota S, et al. An interesting case of unintentional vitamin D toxicity in an infant due to erroneous supplement concentration: a case report. *Ann Med Surg (Lond).* 2023 Apr 6;85(5):1971-1974. <https://doi.org/10.1097/MS9.0000000000000528>. eCollection 2023 May. PMID: 37228984 Free PMC article.

- Koca Yozgat A, Azak E, Kaçar D, et al. The Effects of Vitamin D on Myocardial Function Demonstrated by Speckle-Tracking Echocardiography in Children with Beta Thalassemia. *Türk Kardiyol Dern Ars.* 2023 Jul;51(5):328-332. <https://doi.org/10.5543/tkda.2023.85265>. PMID: 37450454
- Kocaay F, Bilen A, Asik A, et al. Changes in choroidal tissue post-supplementation with vitamin D in pediatric patients who are deficient in vitamin D. *Int Ophthalmol.* 2023 Jul 3. <https://doi.org/10.1007/s10792-023-02787-y>. Online ahead of print. PMID: 37395907
- Kojima R, Shinohara R, Kushima M, et al. Effect of birth season on allergic rhinitis and cedar pollinosis considering allergen and vitamin D exposure: The Japan Environment and Children's study (JECS). *Allergol Int.* 2023 Jul;72(3):411-417. <https://doi.org/10.1016/j.alit.2023.01.003>. Epub 2023 Jan 30. PMID: 36725444
- Korkut O, Aydin H. Neurological Symptoms That May Represent a Warning in Terms of Diagnosis and Treatment in a Group of Children and Adolescents with Vitamin D Deficiency. *Children (Basel).* 2023 Jul 20;10(7):1251. <https://doi.org/10.3390/children10071251>. PMID: 37508748
- Kumar S, Randhawa MS, Angurana SK, et al. Clinical Profile, Intensive Care Needs and Outcome of Children with Dilated Cardiomyopathy Associated with Vitamin D Deficiency: A 5-year PICU Experience. *Indian J Crit Care Med.* 2023 Jul;27(7):510-514. <https://doi.org/10.5005/jp-journals-10071-24484>. PMID: 37502290
- Latoch E, Kozłowski K, Konończuk K, et al. Vitamin D Deficiency and Carotid Media-Intima Thickness in Childhood Cancer Survivors. *Nutrients.* 2023 May 16;15(10):2333. <https://doi.org/10.3390/nu15102333>. PMID: 37242216
- Levita J, Wilar G, Wahyuni I, et al. Clinical Toxicology of Vitamin D in Pediatrics: A Review and Case Reports. *Toxics.* 2023 Jul 24;11(7):642. <https://doi.org/10.3390/toxics11070642>. PMID: 37505607
- Lindqvist PG, Gissler M, Essén B. Is there a relation between stillbirth and low levels of vitamin D in the population? A bi-national follow-up study of vitamin D fortification. *BMC Pregnancy Childbirth.* 2023 May 17;23(1):359. <https://doi.org/10.1186/s12884-023-05673-8>. PMID: 37198534
- Loddo F, Nauleau S, Lapalus D, et al. Association of Maternal Gestational Vitamin D Supplementation with Respiratory Health of Young Children. *Nutrients.* 2023 May 19;15(10):2380. <https://doi.org/10.3390/nu15102380>. PMID: 37242263
- Loni R, Zameer S, Hasan FA, et al. Vitamin-D Status and Clinical Outcomes in Critically Ill Children. *Indian J Crit Care Med.* 2023 Jul;27(7):503-509. <https://doi.org/10.5005/jp-journals-10071-24486>. PMID: 37502287
- Mabrouk RE, Hussein DT, Abbas MEER, et al. Sufficient vitamin D is favorable for children with persistent and chronic immune thrombocytopenia. *Ann Hematol.* 2023 Aug;102(8):2033-2038. <https://doi.org/10.1007/s00277-023-05210-9>. Epub 2023 May 5. PMID: 37145323
- Majeed M, Siddiqui M, Lessan N. Vitamin D deficiency increases with age and adiposity in Emirati children and adolescents irrespective of type 1 diabetes mellitus: a case control study. *BMC Endocr Disord.* 2023 Jul 14;23(1):150. <https://doi.org/10.1186/s12902-023-01405-3>. PMID: 37452421
- Markers D. Retracted: Effect of Vitamin D Combined with Recombinant Human Growth Hormone in Children with Growth Hormone Deficiency. *Dis Markers.* 2023 Jul 19;2023:9821580. <https://doi.org/10.1155/2023/9821580>. eCollection 2023. PMID: 37502569
- Matejek T, Zapletalova B, Stepan M, et al. Dynamics of the vitamin D C3-epimer levels in preterm infants. *Clin Chem Lab Med.* 2023 Jan 23;61(6):1084-1094. <https://doi.org/10.1515/cclm-2022-1128>. Print 2023 May 25. PMID: 36660856
- Melough MM, Li M, Hamra G, et al. Greater Gestational Vitamin D Status is Associated with Reduced Childhood Behavioral Problems in the Environmental Influences on Child Health Outcomes Program. *J Nutr.* 2023 May;153(5):1502-1511. <https://doi.org/10.1016/j.tjnut.2023.03.005>. Epub 2023 Apr 4. PMID: 37147034
- Middelkoop K, Stewart J, Walker N, et al. Vitamin D supplementation to prevent tuberculosis infection in South African school-children: multicenter phase 3 double-blind randomized placebo-controlled trial (ViDi-Kids). *Int J Infect Dis.* 2023 Sep;134:63-70. <https://doi.org/10.1016/j.ijid.2023.05.010>. Epub 2023 May 20. PMID: 37211272
- Miller JJ, Augustin R, Sepiashvili L, et al. Analytical Unreliability of 25 Hydroxy Vitamin D Measurements in Pre-Term Neonates. *J Appl Lab Med.* 2023 Jul 20:jfad033. <https://doi.org/10.1093/jalm/jfad033>. Online ahead of print. PMID: 37473432
- Mirhosseini H, Maayeshi N, Hooshmandi H, et al. The effect of vitamin D supplementation on the brain mapping and behavioral performance of children with ADHD: a double-blinded randomized controlled trials. *Nutr Neurosci.* 2023 Jul 25:1-11. <https://doi.org/10.1080/1028415X.2023.2233752>. Online ahead of print. PMID: 37489917
- Mishra S, Mishra D, Mahajan B, et al. Effect of Daily Vitamin D Supplementation on Serum Vitamin D Levels in Children with Epilepsy Receiving Sodium Valproate Monotherapy: A Randomized, Controlled Trial. *Indian J Pediatr.* 2023 May;90(5):450-456. <https://doi.org/10.1007/s12098-022-04225-w>. Epub 2022 Jun 28. PMID: 35763213
- Moon RJ, Green HD, D'Angelo S, et al. The effect of pregnancy vitamin D supplementation on offspring bone mineral density in childhood: a systematic review and meta-analysis. *Osteoporos Int.* 2023 Jul;34(7):1269-1279. <https://doi.org/10.1007/s00198-023-06751-5>. Epub 2023 Apr 27. PMID: 37103591
- Muzzammil M, Minhas MS, Mughal A, et al. Prevalence of inadequate vitamin D level and its predictors in children presenting with torus fractures. *Eur J Orthop Surg Traumatol.* 2023 Jul;33(5):1767-1772. <https://doi.org/10.1007/s00590-022-03354-4>. Epub 2022 Aug 10. PMID: 35947197
- Nematollahi P, Arabi S, Mansourian M, et al. Potential role of serum vitamin D as a risk factor in pediatric acute lymphoblastic leukemia. *Pediatr Hematol Oncol.* 2023 Jul 21:1-11. <https://doi.org/10.1080/08880018.2023.2202687>. Online ahead of print. PMID: 37477214
- Panfili FM, Convertino A, Grugni G, et al. Multicentric Italian case-control study on 25OH vitamin D levels in children and ado-

- lescents with Prader-Willi syndrome. *J Endocrinol Invest.* 2023 Jul;46(7):1397-1406. <https://doi.org/10.1007/s40618-022-01990-5>. Epub 2023 Jan 28. PMID: 36708456
- Petrarca C, Viola D. Vitamin D Role in Childhood Mite Allergy and Allergen Immunotherapy (AIT). *Biomedicines.* 2023 Jun 13;11(6):1700. <https://doi.org/10.3390/biomedicines11061700>. PMID: 37371795
 - Pourrostami K, Heshmat R, Derakhshanian H, et al. The association between vitamin D status and sleep duration in school-aged children; the CASPIAN-V study. *J Diabetes Metab Disord.* 2022 Nov 17;22(1):341-346. <https://doi.org/10.1007/s40200-022-01146-5>. eCollection 2023 Jun. PMID: 37255800
 - Pruneti C, Guidotti S. Need for Multidimensional and Multidisciplinary Management of Depressed Preadolescents and Adolescents: A Review of Randomized Controlled Trials on Oral Supplementations (Omega-3, Fish Oil, Vitamin D3). *Nutrients.* 2023 May 15;15(10):2306. <https://doi.org/10.3390/nu15102306>. PMID: 37242190
 - Rached V, Diogenes MEL, Donangelo CM, et al. Calcium plus vitamin D supplementation during pregnancy reduces postpartum fat mass in adolescents: A randomized trial. *Am J Hum Biol.* 2023 May 11:e23911. <https://doi.org/10.1002/ajhb.23911>. Online ahead of print. PMID: 37166151
 - Ragunathan K, Chakrabarty B. Vitamin D Supplementation in Children on Antiseizure Medications: High Time to Have Proper Guidelines. *Indian J Pediatr.* 2023 May;90(5):431-432. <https://doi.org/10.1007/s12098-023-04480-5>. Epub 2023 Feb 22. PMID: 36811775
 - Sangüesa J, Sunyer J, Garcia-Esteban R, et al. Prenatal and child vitamin D levels and allergy and asthma in childhood. *Pediatr Res.* 2023 May;93(6):1745-1751. <https://doi.org/10.1038/s41390-022-02256-9>. Epub 2022 Sep 3. PMID: 36057646
 - Soltani S, Beigrezaei S, Abdollahi S, et al. Oral vitamin D supplementation and body weight in children and adolescents: a systematic review and meta-analysis of randomized controlled trials. *Eur J Pediatr.* 2023 May;182(5):1977-1989. <https://doi.org/10.1007/s00431-023-04889-2>. Epub 2023 Mar 1. PMID: 36856888
 - Sudjaritruk T, Kanjanavanit S, Chaito T, et al. A Three-Year Follow-Up of Bone Density Among Thai Adolescents With Perinatally Acquired HIV After Completion of Vitamin D and Calcium Supplementation. *J Adolesc Health.* 2023 Aug;73(2):262-270. <https://doi.org/10.1016/j.jadohealth.2023.03.012>. Epub 2023 Jun 7. PMID: 37294251
 - Sung M. Trends of vitamin D in asthma in the pediatric population for two decades: a systematic review. *Clin Exp Pediatr.* 2023 Aug;66(8):339-347. <https://doi.org/10.3345/cep.2022.01109>. Epub 2023 Jun 14. PMID: 37321572
 - Surucu Kara I, Mertoglu C, Siranli G, et al. The Relationship Between Vitamin-D Deficiency and Protein Oxidation Among Obese Children. *Fetal Pediatr Pathol.* 2023 Aug;42(4):599-613. <https://doi.org/10.1080/15513815.2023.2183026>. Epub 2023 May 8. PMID: 37154302
 - Tabassum A, Ali A, Zahedi FD, et al. Immunomodulatory Role of Vitamin D on Gut Microbiome in Children. *Biomedicines.* 2023 May 14;11(5):1441. <https://doi.org/10.3390/biomedicines11051441>. PMID: 37239112
 - Takahashi K, Arimitsu T, Hara-Isono K, et al. Seasonal variation in vitamin D status of Japanese infants starts to emerge at 2 months of age: a retrospective cohort study. *Br J Nutr.* 2023 Jun 14;129(11):1908-1915. <https://doi.org/10.1017/S0007114522002744>. Epub 2022 Aug 26. PMID: 36017869
 - Tang WQ, Ma N, Meng LY, et al. Vitamin D supplementation improved physical growth and neurologic development of Preterm Infants receiving Nesting Care in the neonatal Intensive Care Unit. *BMC Pediatr.* 2023 May 20;23(1):248. <https://doi.org/10.1186/s12887-023-04075-1>. PMID: 37210477
 - Tsotra K, Garoufi A, Kossiva I, et al. The impact of vitamin D supplementation on serum cathelicidin levels and the clinical course of atopic dermatitis in children. *Minerva Pediatr (Torino).* 2023 Jun;75(3):395-399. <https://doi.org/10.23736/S2724-5276.17.04910-6>. Epub 2017 Jun 22. PMID: 28643993
 - Tugrul B, Demirdag HG, Hanli Sahin A. Vitamin D Levels in Children During Winter and the Relationship Between Sunscreen and Sun Protection Behaviors. *Dermatol Pract Concept.* 2023 Jul 1;13(3):e2023190. <https://doi.org/10.5826/dpc.1303a190>. PMID: 37557131
 - Twanabasu S, Ghimire J, Homagain S, et al. Vitamin D supplementation leading to hypervitaminosis D in a breastfed infant: A case report. *Clin Case Rep.* 2023 Jul 5;11(7):e7635. <https://doi.org/10.1002/ccr3.7635>. eCollection 2023 Jul. PMID: 37415587
 - van der Velde LA, Beth SA, Voortman T, et al. Anti-tissue transglutaminase antibodies (TG2A) positivity and the risk of vitamin D deficiency among children - a cross-sectional study in the generation R cohort. *BMC Pediatr.* 2023 Jun 7;23(1):286. <https://doi.org/10.1186/s12887-023-04041-x>. PMID: 37286940
 - von Hurst P, Mazahery H, Reynolds E, et al. Knowledge, attitudes and behaviours towards vitamin D and sun exposure of parents of infants and young children and health professionals in New Zealand. *Nutr Health.* 2023 Jul 2;2601060231185190. <https://doi.org/10.1177/02601060231185190>. Online ahead of print. PMID: 37394875
 - Weiler HA, Fu WH, Razaghi M, et al. Parathyroid hormone-vitamin D dynamics vary according to the definition of vitamin D deficiency in newborn infants. *Bone.* 2023 Jul 30;175:116862. <https://doi.org/10.1016/j.bone.2023.116862>. Online ahead of print. PMID: 37524294
 - Wolters M, Marron M, Foraita R, et al. Longitudinal associations between vitamin D status and cardiometabolic risk markers among children and adolescents. *J Clin Endocrinol Metab.* 2023 Jun 1:dgad310. <https://doi.org/10.1210/clinem/dgad310>. Online ahead of print. PMID: 37261399
 - Wu C, Zhang X, Yan F, et al. Does vitamin D have a potential role in precocious puberty? A meta-analysis. *Food Funct.* 2023 Jun 6;14(11):5301-5310. <https://doi.org/10.1039/d3fo00665d>. PMID: 37203349
 - Wu Y, Wang F, Li A, et al. Vitamin D status among infants and children in Shanghai, China: A hospital-based study. *Food Sci Nutr.* 2023 Mar 8;11(6):3111-3120. <https://doi.org/10.1002/fsn3.3292>. eCollection 2023 Jun. PMID: 37324927

- Xiaoxia L, Jilong J, Xianrui C, et al. Vitamin D status and tic disorder: a systematic review and meta-analysis of observational studies. *Front Pediatr*. 2023 May 30;11:1173741. <https://doi.org/10.3389/fped.2023.1173741>. eCollection 2023. PMID: 37325365
- Zeng R, Li Y, Shen S, et al. Is antenatal or early-life vitamin D associated with eczema or food allergy in childhood? A systematic review. *Clin Exp Allergy*. 2023 May;53(5):511-525. <https://doi.org/10.1111/cea.14281>. Epub 2023 Jan 17. PMID: 36648071
- Zhang M, Wu Y, Lu Z, et al. Effects of Vitamin D Supplementation on Children with Autism Spectrum Disorder: A Systematic Review and Meta-analysis. *Clin Psychopharmacol Neurosci*. 2023 May 30;21(2):240-251. <https://doi.org/10.9758/cpn.2023.21.2.240>. PMID: 37119216
- Zhou W, Wang P, Bai Y, et al. Vitamin D metabolic pathway genes polymorphisms and vitamin D levels in association with neonatal hyperbilirubinemia in China: a single-center retrospective cohort study. *BMC Pediatr*. 2023 May 31;23(1):275. <https://doi.org/10.1186/s12887-023-04086-y>. PMID: 37259065
- Ziyab AH, Al-Taiar A, Al-Sabah R, et al. Sex and obesity status modify the association between vitamin D and eczema among adolescents. *Pediatr Res*. 2023 May 12. <https://doi.org/10.1038/s41390-023-02641-y>. Online ahead of print. PMID: 37173405
- Zurynski Y, Munns CF, Sezgin G, et al. Vitamin D testing in children and adolescents in Victoria, Australia: are testing practices in line with global recommendations? *Arch Dis Child*. 2023 May 17;archdischild-2022-325000. <https://doi.org/10.1136/archdischild-2022-325000>. Online ahead of print. PMID: 37197895
- binding protein gene polymorphisms in patients with asthma: a pilot study. *BMC Pulm Med*. 2023 Jul 5;23(1):245. <https://doi.org/10.1186/s12890-023-02531-3>. PMID: 37407930
- Bergagnini-Kolev MC, Hsu S, Aitken ML, et al. Metabolism and pharmacokinetics of vitamin D in patients with cystic fibrosis. *J Steroid Biochem Mol Biol*. 2023 May 20;232:106332. <https://doi.org/10.1016/j.jsbmb.2023.106332>. Online ahead of print. PMID: 37217104
- Chang Q, Zhu Y, Zhou G, et al. Vitamin D status, sleep patterns, genetic susceptibility, and the risk of incident adult-onset asthma: a large prospective cohort study. *Front Nutr*. 2023 Jun 30;10:1222499. <https://doi.org/10.3389/fnut.2023.1222499>. eCollection 2023. PMID: 37457981
- de Menezes Júnior LAA, Fajardo VC, de Freitas SN, et al. Rotating shift workers with vitamin D deficiency have a higher risk of obstructive sleep apnea. *Sleep Breath*. 2023 May;27(2):727-735. <https://doi.org/10.1007/s11325-022-02603-4>. Epub 2022 Mar 26. PMID: 35347657
- Georgoulis M, Kontogianni MD, Kechribari I, et al. Associations between serum vitamin D status and the cardiometabolic profile of patients with obstructive sleep apnea. *Hormones (Athens)*. 2023 Jun 15. <https://doi.org/10.1007/s42000-023-00456-4>. Online ahead of print. PMID: 37322405
- Gwadera Ł, Białas AJ, Kumor-Kisielewska A, et al. Calcium, Phosphate, and Vitamin D Status in Patients with Sarcoidosis-Associations with Disease Activity and Symptoms. *J Clin Med*. 2023 Jul 18;12(14):4745. <https://doi.org/10.3390/jcm12144745>. PMID: 37510860
- Hernández-Colín DD, Bedolla-Barajas M, Morales-Romero J, et al. Serum Vitamin D Is Inversely Associated with Blood Eosinophil Count Among Adults with Allergic Asthma. *Thorac Res Pract*. 2023 Jul;24(4):208-213. <https://doi.org/10.5152/ThoracResPract.2023.22154>. PMID: 37485710
- Liao S, Huang Y, Zhang J, et al. Vitamin D promotes epithelial tissue repair and host defense responses against influenza H1N1 virus and *Staphylococcus aureus* infections. *Respir Res*. 2023 Jul 5;24(1):175. <https://doi.org/10.1186/s12931-023-02477-4>. PMID: 37407993
- Moideen K, Nathella PK, Madabushi S, et al. Plasma Vitamin D levels in correlation with circulatory proteins could be a potential biomarker tool for pulmonary tuberculosis and treatment monitoring. *Cytokine*. 2023 Aug;168:156238. <https://doi.org/10.1016/j.cyto.2023.156238>. Epub 2023 Jun 3. PMID: 37276815
- Perryman AN, Kim HH, Payton A, et al. Plasma sterols and vitamin D are correlates and predictors of ozone-induced inflammation in the lung: A pilot study. *PLoS One*. 2023 May 15;18(5):e0285721. <https://doi.org/10.1371/journal.pone.0285721>. eCollection 2023. PMID: 37186612
- Salameh L, Mahmood W, Hamoudi R, et al. The Role of Vitamin D Supplementation on Airway Remodeling in Asthma: A Systematic Review. *Nutrients*. 2023 May 26;15(11):2477. <https://doi.org/10.3390/nu15112477>. PMID: 37299440
- Valle MS, Russo C, Casabona A, et al. Anti-inflammatory role of vitamin D in muscle dysfunctions of patients with chronic obstructive pulmonary disease: a comprehensive review. *Minerva Med*. 2023 Jun;114(3):357-371. <https://doi.org/10.23736/S0026-4806.22.07879-X>. Epub 2022 Mar 25. PMID: 35332756
- Wang M, Zhang Q, Xu G, et al. [Association between vitamin D level and blood eosinophil count in healthy population and patients with chronic obstructive pulmonary disease]. *Nan Fang Yi Ke Da Xue Xue Bao*. 2023 May 20;43(5):727-732. <https://doi.org/10.12122/j.issn.1673-4254.2023.05.07>. PMID: 37313813
- Wu M, Bhimavarapu A, Alvarez JA, et al. Changes in bone turnover after high-dose vitamin D supplementation during acute pulmonary exacerbation in cystic fibrosis. *Bone*. 2023 Sep;174:116835. <https://doi.org/10.1016/j.bone.2023.116835>. Epub 2023 Jun 28. PMID: 37390941
- Zhu Z, Wan X, Liu J, et al. Vitamin D status and chronic obstructive pulmonary disease risk: a prospective UK Biobank study. *BMJ Open Respir Res*. 2023 Jun;10(1):e001684. <https://doi.org/10.1136/bmjresp-2023-001684>. PMID: 37353234

PNEUMOLOGY

- Antonio Buendía J, Rodríguez-Martínez CE, Sossa-Briceño MP. Cost utility of vitamin D supplementation in adults with mild to moderate asthma. *J Asthma*. 2023 May;60(5):951-959. <https://doi.org/10.1080/02770903.2022.2110113>. Epub 2022 Sep 14. PMID: 35920247
- Bastys D, Tamasauskienė L, Golubickaitė I, et al. Vitamin D receptor and vitamin D

PSYCHIATRY

- Alipouri M, Amiri E, Hoseini R, et al. Effects of eight weeks of aerobic exercise

- and vitamin D supplementation on psychiatric comorbidities in men with migraine and vitamin D insufficiency: A randomized controlled clinical trial. *J Affect Disord.* 2023 Aug 1;334:12-20. <https://doi.org/10.1016/j.jad.2023.04.108>. Epub 2023 May 3. PMID: 37146906
- Almugbil M, Almadani ME, Albraiki SA, et al. Impact of Vitamin D Deficiency on Mental Health in University Students: A Cross-Sectional Study. *Healthcare (Basel).* 2023 Jul 23;11(14):2097. <https://doi.org/10.3390/healthcare11142097>. PMID: 37510537
 - Fraenkel E, Orlický M, Fedičová M, et al. Concomitant occurrence of Wernicke's encephalopathy and sarcopenia due to vitamin D depletion in patients with alcohol use disorder: a case report. *J Int Med Res.* 2023 Jun;51(6):3000605231182262. <https://doi.org/10.1177/03000605231182262>. PMID: 37340718
 - Jaholkowski P, Hindley GFL, Shadrin AA, et al. Genome-wide Association Analysis of Schizophrenia and Vitamin D Levels Shows Shared Genetic Architecture and Identifies Novel Risk Loci. *Schizophr Bull.* 2023 May 10:sbad063. <https://doi.org/10.1093/schbul/sbad063>. Online ahead of print. PMID: 37163672
 - Jasemi SV, Zandieh Z, Zandieh N, et al. Is vitamin D supplementation program in Iranian schools effective in reducing adolescent depressive symptoms? Cost effectiveness study. *BMC Public Health.* 2023 Jul 20;23(1):1393. <https://doi.org/10.1186/s12889-023-16244-z>. PMID: 37474906
 - Lu ZL, Lu K. Comment on "Fine particulate matter, vitamin D, physical activity, and major depressive disorder in elderly adults: Results from UK Biobank". *J Affect Disord.* 2023 Oct 15;339:998-999. <https://doi.org/10.1016/j.jad.2023.05.034>. Epub 2023 May 16. PMID: 37201897
 - Ma J, Li K. Negative Association between Serum Vitamin D Levels and Depression in a Young Adult US Population: A Cross-Sectional Study of NHANES 2007-2018. *Nutrients.* 2023 Jun 29;15(13):2947. <https://doi.org/10.3390/nu15132947>. PMID: 37447273
 - Martín-González C, Fernández-Alonso P, Pérez-Hernández O, et al. Sarcopenic Obesity in People with Alcoholic Use Disorder: Relation with Inflammation, Vascular Risk Factors and Serum Vitamin D Levels. *Int J Mol Sci.* 2023 Jun 9;24(12):9976. <https://doi.org/10.3390/ijms24129976>. PMID: 37373124
 - Mo H, Zhang J, Huo C, et al. The association of vitamin D deficiency, age and depression in US adults: a cross-sectional analysis. *BMC Psychiatry.* 2023 Jul 24;23(1):534. <https://doi.org/10.1186/s12888-023-04685-0>. PMID: 37488550
 - Park Y, Ah YM, Yu YM. Vitamin D supplementation for depression in older adults: a meta-analysis of randomized controlled trials. *Front Nutr.* 2023 Jun 21;10:1169436. <https://doi.org/10.3389/fnut.2023.1169436>. eCollection 2023. PMID: 37415914
 - Sun D, Song M, Zeng C, et al. Associations of vitamin D-related single nucleotide polymorphisms with post-stroke depression among ischemic stroke population. *Front Psychiatry.* 2023 Jun 2;14:1148047. <https://doi.org/10.3389/fpsy.2023.1148047>. eCollection 2023. PMID: 37404714
 - Tamang MK, Ali A, Pertile RN, et al. Developmental vitamin D-deficiency produces autism-relevant behaviours and gut-health associated alterations in a rat model. *Transl Psychiatry.* 2023 Jun 14;13(1):204. <https://doi.org/10.1038/s41398-023-02513-3>. PMID: 37316481
 - Trovato B, Godos J, Varrasi S, et al. Physical Activity, Sun Exposure, Vitamin D Intake and Perceived Stress in Italian Adults. *Nutrients.* 2023 May 13;15(10):2301. <https://doi.org/10.3390/nu15102301>. PMID: 37242183
 - Vyas CM, Mischoulon D, Chang G, et al. Effects of Vitamin D3 and Marine Omega-3 Fatty Acids Supplementation on Indicated and Selective Prevention of Depression in Older Adults: Results From the Clinical Center Sub-Cohort of the Vitamin D and Omega-3 Trial (VITAL). *J Clin Psychiatry.* 2023 Jun 26;84(4):22m14629. <https://doi.org/10.4088/JCP.22m14629>. PMID: 37378490
 - Wu M, Xie J, Zhou Z, et al. Response to the comment on "Fine particulate matter, vitamin D, physical activity, and major depressive disorder in elderly adults: Results from UK Biobank". *J Affect Disord.* 2023 Oct 1;338:422. <https://doi.org/10.1016/j.jad.2023.06.049>. Epub 2023 Jun 24. PMID: 37364656
- ## RHEUMATOLOGY
- [No authors listed] Vitamin D supplementation and fracture risk in healthy adults. *Drug Ther Bull.* 2023 Jul;61(7):101. <https://doi.org/10.1136/dtb.2023.000028>. Epub 2023 Jun 9. PMID: 37295925
 - Agostini D, Donati Zeppa S. Vitamin D, Diet and Musculoskeletal Health. *Nutrients.* 2023 Jun 27;15(13):2902. <https://doi.org/10.3390/nu15132902>. PMID: 37447228
 - Al-Saoodi H, Kolahdooz F, Andersen JR, et al. Effect of vitamin D on inflammatory and clinical outcomes in patients with rheumatoid arthritis: a systematic review and dose-response meta-analysis of randomized controlled trials. *Nutr Rev.* 2023 Jul 12:nuad083. <https://doi.org/10.1093/nutrit/nuad083>. Online ahead of print. PMID: 37437898
 - And Alternative Medicine EC. Retracted: Correlation Analysis of Adverse Reactions of Antiosteoporosis Drugs by Different Mechanisms with Bone Turnover and Vitamin D. *Evid Based Complement Alternat Med.* 2023 Jun 21;2023:9817927. <https://doi.org/10.1155/2023/9817927>. eCollection 2023. PMID: 37387919
 - Asgari Savadjani S, Mt Sherwin C, Heidari-Soureshjani S, et al. The role of Vitamin D in carpal tunnel syndrome risk and supplementation outcomes: A systematic review. *Curr Rheumatol Rev.* 2023 May 5. <https://doi.org/10.2174/1573397119666230505101443>. Online ahead of print. PMID: 37151171
 - Bollen SE, Bass JJ, Wilkinson DJ, et al. The impact of genetic variation within the vitamin D pathway upon skeletal muscle function: A systematic review. *J Steroid Biochem Mol Biol.* 2023 May;229:106266. <https://doi.org/10.1016/j.jsbmb.2023.106266>. Epub 2023 Feb 21. PMID: 36822332
 - Burt LA, Kaufmann M, Rose MS, et al. Measurements of the Vitamin D Metabolome in the Calgary Vitamin D Study: Relationship of Vitamin D Metabolites to Bone Loss. *J Bone Miner Res.* 2023 Jul 6. <https://doi.org/10.1002/jbmr.4876>. Online ahead of print. PMID: 37409797
 - Chang K, Albright JA, Quinn M, et al. A Diagnosis of Vitamin D Deficiency Is Associated With Increased Rates of Primary Patellar Instability and Need for Recurrent Surgical

- Stabilization. *Sports Health*. 2023 May 19;19417381231172726. <https://doi.org/10.1177/19417381231172726>. Online ahead of print. PMID: 37208906
- Chen X, Zhang Q, Song T, et al. Vitamin D deficiency triggers intrinsic apoptosis by impairing SP1-dependent antiapoptotic signaling in chronic hematogenous osteomyelitis. *Gene*. 2023 Jun 20;870:147388. <https://doi.org/10.1016/j.gene.2023.147388>. Epub 2023 Apr 5. PMID: 37024063
 - Dal-Bekar NE, İşlekel GH, Köken-Avşar A, et al. Vitamin D attenuates elevated oxidative DNA damage in scleroderma patients with organ involvement: A prospective study. *J Steroid Biochem Mol Biol*. 2023 May;229:106273. <https://doi.org/10.1016/j.jsbmb.2023.106273>. Epub 2023 Feb 21. PMID: 36813139
 - Divjak A, Jovanovic I, Matic A, et al. The influence of vitamin D supplementation on the expression of mediators of inflammation in knee osteoarthritis. *Immunol Res*. 2023 Jun;71(3):442-450. <https://doi.org/10.1007/s12026-022-09354-0>. Epub 2022 Dec 26. PMID: 36571658
 - Ekşi MŞ, Orhun Ö, Demir YN, et al. Are serum thyroid hormone, parathormone, calcium, and vitamin D levels associated with lumbar spine degeneration? A cross-sectional observational clinical study. *Eur Spine J*. 2023 May;32(5):1561-1574. <https://doi.org/10.1007/s00586-023-07673-w>. Epub 2023 Mar 28. PMID: 36976340
 - Erkilic B, Dalgic GS. The preventive role of vitamin D in the prevention and management of Fibromyalgia syndrome. *Nutr Health*. 2023 Jun;29(2):223-229. <https://doi.org/10.1177/02601060221144801>. Epub 2023 Jan 2. PMID: 36591895
 - García-Vigara A, Monllor-Tormos A, García-Pérez MÁ, et al. Genetic variants of the vitamin D receptor are related to dynapenia in postmenopausal women. *Maturitas*. 2023 May;171:40-44. <https://doi.org/10.1016/j.maturitas.2023.03.002>. Epub 2023 Mar 24. PMID: 37001478
 - Gnoli M, Brizola E, Tremosini M, et al. Vitamin D and Bone fragility in Individuals with Osteogenesis Imperfecta: A Scoping Review. *Int J Mol Sci*. 2023 May 28;24(11):9416. <https://doi.org/10.3390/ijms24119416>. PMID: 37298368
 - Houston DK, Marsh AP, Neiberg RH, et al. Corrigendum to 'Vitamin D Supplementation and Muscle Power, Strength and Physical Performance in Older Adults: A Randomized Controlled Trial' [The American Journal of Clinical Nutrition, Volume 117, Issue 6, June 2023, Pages 1086-1095]. *Am J Clin Nutr*. 2023 Aug;118(2):486. <https://doi.org/10.1016/j.ajcnut.2023.06.004>. Epub 2023 Jun 15. PMID: 37331702
 - Houston DK, Marsh AP, Neiberg RH, et al. Vitamin D Supplementation and Muscle Power, Strength and Physical Performance in Older Adults: A Randomized Controlled Trial. *Am J Clin Nutr*. 2023 Jun;117(6):1086-1095. <https://doi.org/10.1016/j.ajcnut.2023.04.021>. Epub 2023 Apr 19. PMID: 37084814
 - Im YG, Han MY, Baek HS. Association of Serum Vitamin D Level with Temporomandibular Disorder Incidence: A Retrospective, Multi-Center Cohort Study Using Six Hospital Databases. *Nutrients*. 2023 Jun 24;15(13):2860. <https://doi.org/10.3390/nu15132860>. PMID: 37447187
 - Jeong C, Ha J, Yoo JI, et al. Effects of Bazedoxifene/Vitamin D Combination Therapy on Serum Vitamin D Levels and Bone Turnover Markers in Postmenopausal Women with Osteopenia: A Randomized Controlled Trial. *J Bone Metab*. 2023 May;30(2):189-199. <https://doi.org/10.11005/jbm.2023.30.2.189>. Epub 2023 May 31. PMID: 37449351
 - Kettig E, Kistler-Fischbacher M, de Godoi Rezende Costa Molino C, et al. Association of magnesium and vitamin D status with grip strength and fatigue in older adults: a 4-week observational study of geriatric participants undergoing rehabilitation. *Ageing Clin Exp Res*. 2023 Aug;35(8):1619-1629. <https://doi.org/10.1007/s40520-023-02450-7>. Epub 2023 Jun 7. PMID: 37285075
 - Khabbazi A, Mahmoudi M, Esalatmanesh K, et al. Vitamin D Status in Palindromic Rheumatism: A Propensity Score Matching Analysis. *Lab Med*. 2023 May 19;Imad032. <https://doi.org/10.1093/labmed/Imad032>. Online ahead of print. PMID: 37204153
 - Kim HT, Lee SH, Lee JK, et al. Influence of Vitamin D Deficiency on the Expression of Genes and Proteins in Patients With Medium Rotator Cuff Tears. *Am J Sports Med*. 2023 Aug;51(10):2650-2658. <https://doi.org/10.1177/03635465231184392>. Epub 2023 Jul 14. PMID: 37449678
 - LeBoff MS, Bischoff-Ferrari HA. The Effects of Vitamin D Supplementation on Musculoskeletal Health: The VITAL and DO-Health Trials. *J Gerontol A Biol Sci Med Sci*. 2023 Jun 16;78(Supplement_1):73-78. <https://doi.org/10.1093/gerona/glad073>. PMID: 37325962
 - McGuire BD, Dees A, Hao L, et al. A vitamin D deficient diet increases weight gain and compromises bone biomechanical properties without a reduction in BMD in adult female mice. *J Steroid Biochem Mol Biol*. 2023 Jul;231:106314. <https://doi.org/10.1016/j.jsbmb.2023.106314>. Epub 2023 Apr 23. PMID: 37088440
 - Merle B, Haesebaert J, Viprey M, et al. Chronic pain and vitamin D: A randomized controlled trial in primary care medicine in France, the Dovid study. *Int J Rheum Dis*. 2023 Jun;26(6):1191-1194. <https://doi.org/10.1111/1756-185X.14582>. Epub 2023 Feb 3. PMID: 36737404
 - Minetama M, Kawakami M, Teraguchi M, et al. Branched-chain amino acids plus vitamin D supplementation promote increased muscle strength following lumbar surgery for lumbar spinal stenosis: a randomized trial. *Spine J*. 2023 Jul;23(7):962-972. <https://doi.org/10.1016/j.spinee.2023.03.007>. Epub 2023 Mar 20. PMID: 36940921
 - Mirza AA, Rath H, Dakshinamurthy S, et al. Assessment of Vitamin D Levels and Other Bone Related Biochemical Markers in Healthy Adults in Rural Population of Uttarakhnad, India. *Indian J Clin Biochem*. 2023 Jul;38(3):316-323. <https://doi.org/10.1007/s12291-022-01048-6>. Epub 2022 May 16. PMID: 37234188
 - Mori R, Mae M, Yamanaka H, et al. Locomotor function of skeletal muscle is regulated by vitamin D via adenosine triphosphate metabolism. *Nutrition*. 2023 Jun 5;115:112117. <https://doi.org/10.1016/j.nut.2023.112117>. Online ahead of print. PMID: 37531790
 - Nakamichi Y, Liu Z, Mori T, et al. The vitamin D receptor in osteoblastic cells but not secreted parathyroid hormone is crucial for soft tissue calcification induced by the proresorptive activity of 1,25(OH)2D3. *J Steroid Biochem Mol Biol*. 2023 Jun 22;232:106351. <https://doi.org/10.1016/j.jsbmb.2023.106351>.

- Online ahead of print. PMID: 37352941
- Nasimi N, Sohrabi Z, Nunes EA, et al. Whey Protein Supplementation with or without Vitamin D on Sarcopenia-Related Measures: A Systematic Review and Meta-Analysis. *Adv Nutr.* 2023 Jul;14(4):762-773. <https://doi.org/10.1016/j.advnut.2023.05.011>. Epub 2023 May 15. PMID: 37196876
 - Ostermeier T, Faust L, Cavalcanti-Kußmaul A, et al. The influence of vitamin D on hand-grip strength in elderly trauma patients. *Eur J Med Res.* 2023 May 13;28(1):170. <https://doi.org/10.1186/s40001-023-01123-5>. PMID: 37179360
 - Patel D, Roy G, Endres N, et al. Preoperative Vitamin D Supplementation is a Cost-Effective Intervention in Arthroscopic Rotator Cuff Repair. *J Shoulder Elbow Surg.* 2023 Jun 10:S1058-2746(23)00438-X. <https://doi.org/10.1016/j.jse.2023.05.007>. Online ahead of print. PMID: 37308074
 - Qiu S, Divine G, Rao SD. Effect of vitamin D metabolites on bone histomorphometry in healthy black and white women: An attempt to unravel the so-called vitamin D paradox in blacks. *Bone Rep.* 2022 Dec 22;18:101650. <https://doi.org/10.1016/j.bonr.2022.101650>. eCollection 2023 Jun. PMID: 36588780
 - Radić M, Đogaš H, Kolak E, et al. Vitamin D in psoriatic arthritis - A systematic review and meta-analysis. *Semin Arthritis Rheum.* 2023 Jun;60:152200. <https://doi.org/10.1016/j.semarthrit.2023.152200>. Epub 2023 Apr 1. PMID: 37062151
 - Reid IR. Vitamin D and fractures. *Lancet Diabetes Endocrinol.* 2023 May;11(5):301-302. [https://doi.org/10.1016/S2213-8587\(23\)00087-6](https://doi.org/10.1016/S2213-8587(23)00087-6). Epub 2023 Mar 31. PMID: 37011648
 - Reis AR, Santos RKF, Dos Santos CB, et al. Supplementation of vitamin D isolated or calcium-associated with bone remodeling and fracture risk in postmenopausal women without osteoporosis: A systematic review of randomized clinical trials. *Nutrition.* 2023 Jul 6;116:112151. <https://doi.org/10.1016/j.nut.2023.112151>. Online ahead of print. PMID: 37544189
 - Ren YQ, Liu JP, Cui Y. [Associations between vitamin D levels and systemic lupus erythematosus risk:a Mendelian randomized study]. *Zhonghua Yu Fang Yi Xue Za Zhi.* 2023 Jun 6;57(6):891-898. <https://doi.org/10.3760/cma.j.cn112150-20220622-00643>. PMID: 37357209
 - Rojano-Ortega D, Berral-de la Rosa FJ. Effects of vitamin D supplementation on muscle function and recovery after exercise-induced muscle damage: A systematic review. *J Hum Nutr Diet.* 2023 Jun;36(3):1068-1078. <https://doi.org/10.1111/jhn.13084>. Epub 2022 Oct 3. PMID: 36149089
 - Saengsiwaritt W, Ngamtipakon P, Udomsinprasert W. Vitamin D and autophagy in knee osteoarthritis: A review. *Int Immunopharmacol.* 2023 Jul 28;123:110712. <https://doi.org/10.1016/j.intimp.2023.110712>. Online ahead of print. PMID: 37523972
 - Saleh A, Shibli F, El Masri J, et al. Osteoporosis and vitamin D consumption: knowledge and practice in different Arab countries. *Arch Osteoporos.* 2023 Jun 21;18(1):85. <https://doi.org/10.1007/s11657-023-01298-8>. PMID: 37341798
 - Saleh A, Shibli F, Masri JE, et al. Correction: Osteoporosis and vitamin D consumption: knowledge and practice in different Arab countries. *Arch Osteoporos.* 2023 Jun 27;18(1):87. <https://doi.org/10.1007/s11657-023-01300-3>. PMID: 37368185
 - Shah V, Zia H, Lo DF. Investigating seasonal association between vitamin D concentration, muscle mass and strength in postmenopausal women: a critical analysis. *J Nutr Sci.* 2023 Jul 13;12:e74. <https://doi.org/10.1017/jns.2023.33>. eCollection 2023. PMID: 37457678
 - Sohoul M, Wang S, Almuqayyid F, et al. Impact of vitamin D supplementation on markers of bone turnover: Systematic review and meta-analysis of randomised controlled trials. *Eur J Clin Invest.* 2023 Jun 14:e14038. <https://doi.org/10.1111/eci.14038>. Online ahead of print. PMID: 37314058
 - Soltani Bajestani F, Khajavian N, Salarbashi D, et al. Relationship Between Serum Vitamin D Level and Disease Severity in Rheumatoid Arthritis. *Clin Med Insights Arthritis Musculoskelet Disord.* 2023 Jul 6;16:11795441231182997. <https://doi.org/10.1177/11795441231182997>. eCollection 2023. PMID: 37434995
 - Song Y, Zhang H, Li M, et al. Gorham-Stout disease in the rib and spine treated with zoledronic acid, calcium, and vitamin D after vertebral biopsy: a case description with literature analysis. *Quant Imaging Med Surg.* 2023 May 1;13(5):3316-3325. <https://doi.org/10.21037/qims-22-1090>. Epub 2023 Feb 14. PMID: 37179924
 - Sutherland JP, Zhou A, Hyppönen E. Muscle Traits, Sarcopenia, and Sarcopenic Obesity: A Vitamin D Mendelian Randomization Study. *Nutrients.* 2023 Jun 9;15(12):2703. <https://doi.org/10.3390/nu15122703>. PMID: 37375607
 - Swadi A, Hilal N, Abdul-Aziz M. The role of melatonin and vitamin D in Iraqi premenopausal women osteoarthritis patients. *Georgian Med News.* 2023 May;(338):53-56. PMID: 37419471
 - Tripepi G, Fusaro M, Arcidiacono G, et al. Evaluating benefit from vitamin D supplementation: defining the area for treatment. *Osteoporos Int.* 2023 May 27. <https://doi.org/10.1007/s00198-023-06802-x>. Online ahead of print. PMID: 37243726
 - Venna NK, Lalhrualtuanga H, Challa S. Cowpea isoflavones enhance the osteoblast differentiation and antioxidant capacity in synergy with vitamin D and β -carotene: A mechanistic in vitro study. *Nutr Health.* 2023 Jun 20:2601060231181606. <https://doi.org/10.1177/02601060231181606>. Online ahead of print. PMID: 37338526
 - Wang S, Luo Z, Luo H, et al. Effects of a calcium/vitamin D/Zinc combination on anti-osteoporosis in ovariectomized rats. *J Trace Elem Med Biol.* 2023 May;77:127138. <https://doi.org/10.1016/j.jtemb.2023.127138>. Epub 2023 Jan 26. PMID: 36773556
 - Waterhouse M, Ebeling PR, McLeod DSA, et al. The effect of monthly vitamin D supplementation on fractures: a tertiary outcome from the population-based, double-blind, randomised, placebo-controlled D-Health trial. *Lancet Diabetes Endocrinol.* 2023 May;11(5):324-332. [https://doi.org/10.1016/S2213-8587\(23\)00063-3](https://doi.org/10.1016/S2213-8587(23)00063-3). Epub 2023 Mar 31. PMID: 37011645
 - Weintraub MT, Guntin J, Yang J, et al. Vitamin D3 Supplementation Prior to Total Knee Arthroplasty: A Randomized

- Controlled Trial. *J Arthroplasty*. 2023 Jun;38(6S):S114-S119. <https://doi.org/10.1016/j.arth.2022.08.020>. Epub 2022 Aug 19. PMID: 35988825
- Welford A, Darling AL, Allison S, et al. Response to letter by Lo et al.: Investigating seasonal association between vitamin D concentration, muscle mass and strength in postmenopausal women: a critical analysis. *J Nutr Sci*. 2023 Jul 13;12:e75. <https://doi.org/10.1017/jns.2023.34>. eCollection 2023. PMID: 37457682
 - Wiedemann P, Schmidt FN, Amling M, et al. Zinc and vitamin D deficiency and supplementation in hypophosphatasia patients - A retrospective study. *Bone*. 2023 Jul 22;175:116849. <https://doi.org/10.1016/j.bone.2023.116849>. Online ahead of print. PMID: 37487860
 - Zabihyeganeh M, Amini Kadijani A, Akbari A, et al. Association of serum vitamin D status with serum pro-inflammatory cytokine levels and clinical severity of fibromyalgia patients. *Clin Nutr ESPEN*. 2023 Jun;55:71-75. <https://doi.org/10.1016/j.clnesp.2023.03.006>. Epub 2023 Mar 9. PMID: 37202086
 - Zhao M, Wei F, Li H, et al. Serum vitamin D levels and Sjogren's syndrome: bi-directional Mendelian randomization analysis. *Arthritis Res Ther*. 2023 May 15;25(1):79. <https://doi.org/10.1186/s13075-023-03062-2>. PMID: 37189174
 - Zhao SS, Burgess S. Vitamin D is associated with reduced risk of Sjögren's syndrome: a Mendelian randomization study. *Rheumatology (Oxford)*. 2023 Jul 14:kead356. <https://doi.org/10.1093/rheumatology/kead356>. Online ahead of print. PMID: 37449898
 - Zhao SS, Mason A, Gjekmarkaj E, et al. Associations between vitamin D and autoimmune diseases: Mendelian randomization analysis. *Semin Arthritis Rheum*. 2023 Jun 30;62:152238. <https://doi.org/10.1016/j.semarthrit.2023.152238>. Online ahead of print. PMID: 37437450