VITAMIN D

UpDates Vol. 5 - N. 1 - 2022

Sito Web www.vitamind-journal.it

www.pacinimedicina.it

VITAMIN D
UpDates

Edition
Pacini Editore Srl
Via Gherardesca 1 • 56121 Pisa
Tel. 050 313011 • Fax 050 3130300
Info@pacinieditore.it
www.pacinieditore.it

Pacini Editore Medicine Division
Fabio Poponcini
Sales Manager
050 31 30 218 - fpoponcini@pacinieditore.it
Alessandra Crosato
Sales Manager
050 31 30 239 - acrosato@pacinieditore.it
Manuela Mori
Advertising and New Media Manager
050 31 30 217 - mmori@pacinieditore.it

Editing
Lucia Castelli
050 3130224 - lcastelli@pacinieditore.it

Graphics and pagination
Massimo Arcidiacono
050 3130231 - marcidiacono@pacinieditore.it

Print
Industrie Grafiche Pacini • Pisa

ISSN: 2611-2876 (online)

Registration at the Court of Pisa no. 2/18 dated 23/2/2018
The editor remains available to those who are entitled with whom communication has not been possible as well as for any omissions. Photocopies for the reader's personal use (for their pro- reading, study or consultation) may be made within the limit of 15% of each volume/file of the periodical, excluding advertising pages, upon BP to SIAE of the fee provided for by Law no. 633 of 1941 and following the specific authorisation release of the by CLEARedi: https://www.clearedi.org/topmenu/HOME.aspx. Digital edition - March 2022.

EDITORIAL

Maurizio Rossini
Department of Medicine,
Rheumatology Section, University of Verona

Up to 2019, a progressive increase in the consumption of vitamin D in Italy was noted, with a consequent rise in expenditures borne by the National Health Service (SSN) [Rapporto OsMed (Osservatorio Nazionale sull'impiego dei Medicinali – National Database on the Use of Medicines Report), Agenzia Italiana del Farmaco – Italian Medicines Agency (AIFA)]. The extent and growth in the consumption of Vitamin D led to speculation of possible inappropriate use. With the declared intention of reducing this consumption, in late October 2019 AIFA published Note 96 identifying reimbursement criteria for Vitamin D supplementation for the prevention and treatment of deficiency states in adults [1].
In the first 20 months of application of the Note, compared to previous periods, there was a decrease in consumption and related expenditure for Vitamin D covered by the Note [2] (Fig. 1). However, whether this was due to an improvement in the appropriateness of use is not known.
In this issue we are publishing two contributions that raise doubts and concerns as to whether Note 96 has led to a deterioration in appropriateness of use, at least in some respects, rather than an improvement.

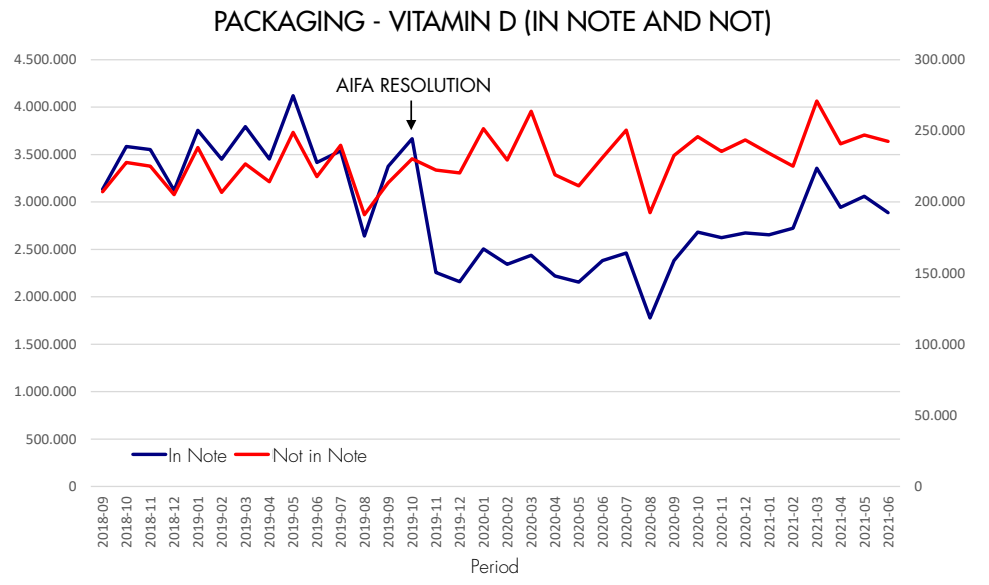

FIGURE 1.
(Source: https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_20mesi_22.10.2021.pdf) [2].

Correspondence
Maurizio Rossini
maurizio.rossini@univr.it

How to cite this article: Rossini M. Editorial. Vitamin D - UpDates 2022;5(1):2-3.

The first article summarises the role of vitamin D in the prevention of osteoporosis, considering its physiological action, and updates the subject in light of some recent publications, sometimes critically highlighting its limitations, which might explain some inconsistencies or discrepancies. Furthermore, the article expresses concern that the fall in consumption among the elderly, which is at risk of vitamin D deficiency and osteoporosis, may have compromised appropriate and often necessary supplementation of this age group. Recall that immediately after the publication of Note 96, in April 2020, it was I, as President of the Italian Society of Osteoporosis, Mineral Metabolism and Skeletal Diseases (SIOMMMS), who reported this risk to AIFA, communicating my concern in view of the preliminary results of an AIFA monitoring report three months after the introduction of Note 96 [3]. In particular, it was noted that the available data did not truly allow any assessment of whether the reduction in consumption and related expenditure on vitamin D could be attributable to improved appropriateness. We were particularly concerned about the significant reduction in the use of vitamin D in the elderly, who are known to be most at risk of deficiency. This is also because it has been known for some time [4], though ignored by Note 96, that there is a reduced ability of the skin to produce adequate amounts of vitamin D despite exposure to sunlight, the main source for meeting requirements, in people over the age of 60. Since Note 96 overlooks this aspect and specifically does not include advanced age as a risk condition for hypovitaminosis D, it does not adequately protect the elderly from the risk of vitamin D deficiency.

The second article analyses some very interesting aspects of the impact of Note 96 on the appropriate use of vitamin D in Italy. Specifically, using administrative flows for examinations and drug prescriptions at a ULSS (Local Health Service), an attempt was made to verify whether or not a reduction in the consumption of vitamin D was accompanied by greater appropriateness of use after Note 96 went into effect. Actually, after Note 96 was published, there was observed a reduction in the appropriate and recommended combination of vitamin D with drugs for the treatment of osteoporosis, which in my opinion was due to the lack of clarity in the text of Note 96 on this point and to its consequent often erroneous interpretation by doctors. Therefore, from this point of view, the observed drop in vitamin D consumption did not coincide with an improvement in appropriate prescription but rather with its worsening. Furthermore, the above analysis showed no improvement in the other indicator assessed, namely the proportion of patients treated with vitamin D without ascertained hypovitaminosis in the last 12 months. This, even though, in my opinion, those conditions for which the same Note does not provide for serum 25(OH)D dosage or for those patients for whom the continuity of treatment or the persistence of well-known previous risk conditions of vitamin D deficiency should be considered. Frankly, to require said dosage to be entitled to supplementation covered by the National Health Service would be superfluous, inconvenient, inapplicable or even unethical.

The need to better assess the actual impact of Note 96 on the appropriateness of vitamin D use, is also further borne out among the conclusions of the foregoing AIFA 2 monitoring report by the following:

- "From the data presented, after 20 months the effects of the Note seem to begin to wane, if compared with the first months of its application…"
- "Assess an awareness campaign on proper prescription addressing primary care general practitioners".

What are your thoughts?

Happy reading!

Bibliography

1. Nota 96 AIFA: https://aifa.gov.it/nota-96
2. https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_20mesi_22.10.2021.pdf
3. https://www.aifa.gov.it/documents/20142/1030827/NOTA-96_valutazione_impatto_su_I trimestre_di_applicazione_31.03.2020.pdf
4. Holick MF, Matsuoka LY, Wortsman J. Age, vitamin D, and solar ultraviolet Lancet. 1989;2(8671):1104-5. https://doi.org/10.1016/s0140-6736(89)91124-0

VITAMIN D
UpDates
2022;5(1):4-7
https://doi.org/10.30455/2611-2876-2022-1e

Update on the role of vitamin D in the prevention of osteoporosis

Stefano Berardi, Francesco Paolo Cantatore
Rheumatology Clinic, Department of Medical and Surgical Sciences, University of Foggia

In recent years the possible multiple positive effects of vitamin D (antineoplastic, cardioprotective, immunomodulatory, etc.) have aroused growing interest and an increase in scientific (and non-scientific) publications on the subject. However, uncertainties about its usefulness in the prevention of osteoporosis have also been raised, following discordant results in the literature, beyond any reasonable doubt on extra-skeletal effects.

Osteoporosis has a burdensome impact on the healthcare system: in Italy approximately 3.5 million women and 1 million men are affected by the disease. Incidence increases with age (the steady ageing of the population leads to more cases). From age 50, the incidence of fragility fractures increases progressively, becoming comparable to that of stroke and breast cancer [1]. Annual costs attributable to such fractures (acute management and long-term disability) grow with the ageing of the population. What is needed is an acceptable prevention strategy that makes the best use of available resources.

NOTE 96

AIFA's recent Note 96 regulates the prescription of compounds with the indication "prevention and treatment of vitamin D deficiency" in adults, charged to the National Health Service (NHS), in an effort to reconcile the need to achieve sufficient vitamin D levels with the need to contain the cost of prescribing vitamin D based products.

AIFA's June 2021 update of the Note [2] (20 months after its introduction), which monitors consumption trends, shows a 25% containment of the expenditure for drugs included in the Note incurred by the NHS compared to previous periods, with insignificant increases in the consumption of and expenditure for vitamin D analogues not in the Note. These are general and preliminary assessments. Considering the diversified "pre-Note" situation in the different Regions of Italy along with the equally disparate "post-Note" response, specific, long-term in-depth studies are clearly necessary. In all age groups (except 0-10 years) there was a reduction in consumption (even among young adults, which was probably excessive). Nevertheless, the greatest reduction was in the 40-60 age group, especially among women, but also in the 60-80 age group (Table I). Both of these age groups are at risk of hypovitaminosis D and osteoporosis, for which correct supplementation is especially important, along with any anti-fracture therapies, whose clinical efficacy depends on the correction of hypovitaminosis D as a prerequisite, as specified in Note 96 and in the literature [3].

VITAMIN D AND BONE HOMOEOSTASIS

Vitamin D is a fat-soluble compound that acts as a steroid hormone. Its main source (with some coming from the diet) is the conversion of pro-vitamin D (7-dehydrocholesterol) in the deep layers of the epidermis, by exposure to UVB radiation, into vitamin D_3 (cholecalciferol), the inactive precursor. Cholecalciferol undergoes an obligatory two- step hydroxylation. The first is in the liver where it turns into 25(OH)D or calcifediol, the compound with the longest half-life, which is used for the dosage of serum vitamin D levels. The second, which is in the kidney, gives rise to the biologically active form, $1,25(OH)_2D$ or calcitriol (Fig. 1). By binding to the vitamin D receptor (VDR), calcitriol induces its biological effects, first of all on phosphocalcic metabolism [stimulation of calcium and phosphate absorption in the small intestine, inhibition of parathormone (PTH) synthesis and secretion, activation of the RANKL/RANK system and consequent osteoclastogenesis by induction of RANKL expression on osteoblasts], regulating serum calcium and phosphorus levels and bone mineralisation (Fig. 2) [4]. It follows that subnormal levels of this nutrient can alter the balance described. Namely, 25(OH)D levels at < 30 ng/mL reduce intestinal calcium absorption (which increases in a linear manner with 25(OH)D levels reaching a *plateau* at 32 ng/mL) [5] and increases PTH secretion,

Correspondence
Stefano Berardi
stefano.berardi@unifg.it

Conflict of interest
The authors state that there are no conflicts of interest.

How to cite this article: Berardi S, Cantatore FP. Update on the role of vitamin D in the prevention of osteoporosis. Vitamin D – Updates 2022;5(1):4-7. https://doi.org/10.30455/2611-2876-2022-1e

TABLE I.
AIFA Note 96 monitoring of vitamin D consumption trends. Preliminary analysis of the 20 months after the introduction of the Note (November 2019 - June 2021). Data by age group - ATC in Note 96. Figures below the national average are in red.[2] NB Gender and age information was not available for 0.5% of packages (https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_20mesi_22.10.2021.pdf).

	Packages females	Delta % packages previous period	Gross females	Delta % packages previous period	Packages males	Delta % expenditure previous period	Gross males	Delta % expenditure previous period
Total Italy	42,295,282	-27.1	337,593,955	-24.7	8,230,373	-19.3	64,113,376	-17.5
Age groups								
0-10	400,521	1.7	2,070,124	1.4	431,335	1.6	2,220,819	1.4
10-20	269,051	-11.6	1,891,416	-14.3	198,484	-9.5	1,353,184	-11.9
20-30	427,089	-23.9	3,459,222	-23.0	186,544	-19.6	1,515,270	-18.1
30-40	787,504	-26.5	6,334,166	-25.7	232,703	-22.8	1,875,888	-20.9
40-50	2,298,338	-34.1	18,748,999	-32.7	470,127	-26.0	3,749,088	-24.2
50-60	6,839,559	-35.1	55,733,820	-33.2	981,648	-21.1	7,812,630	-19.3
60-70	10,043,108	-30.2	81,406,064	-27.5	1,572,989	-21.7	12,588,757	-19.7
70–80	11,762,214	-26.2	94,008,595	-23.1	2,251,209	-21.8	17,946,285	-19.3
> 80	9,467,898	-16.7	73,941,548	-13.3	1,905,334	-15.4	15,051,454	-12.5

stimulating tubular calcium reabsorption, renal hydroxylation of calcifediol to calcitriol, RANKL expression on osteoblasts and ultimately creating an imbalance in bone homoeostasis leading to dissolution of the mineralised bone matrix.[4]

There is no agreement on minimum 25(OH) D serum levels sufficient to prevent osteoporosis. According to the foregoing, levels > 30 ng/mL are optimal, as stated by the *International Osteoporosis Foundation* (IOF) and the *Endocrine Society* and the *National Osteoporosis Foundation* (NOF). Yet, the *World Health Organization* (WHO), the *European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis* (ESCEO) and the *National Osteoporosis Society* (NOS) have deemed 25(OH)D levels at ≥ 20 ng/mL, the threshold transposed in Note 96, to be sufficient. Recommendations and guidelines based on findings from the literature mirror this controversy whilst also being open to criticism for their methodology. For example, a recent systematic review[7] assessed the method of developing 47 Bone Health Guidelines published between 2009 and 2019 (which set out recommendations for serum 25(OH)D levels for the prevention of osteoporosis and fractures, ranging from 10 to 30~100 ng/mL) on the basis of 25 criteria adopted by WHO for the proper development of guidelines, whilst on average each guideline met only 10 out of the 25 methodological criteria.

A further disconcerting factor is the lack of standardisation of methods for measuring serum 25(OH)D levels, especially in studies prior to 2009 (the year when the first certified measurement procedures were im-

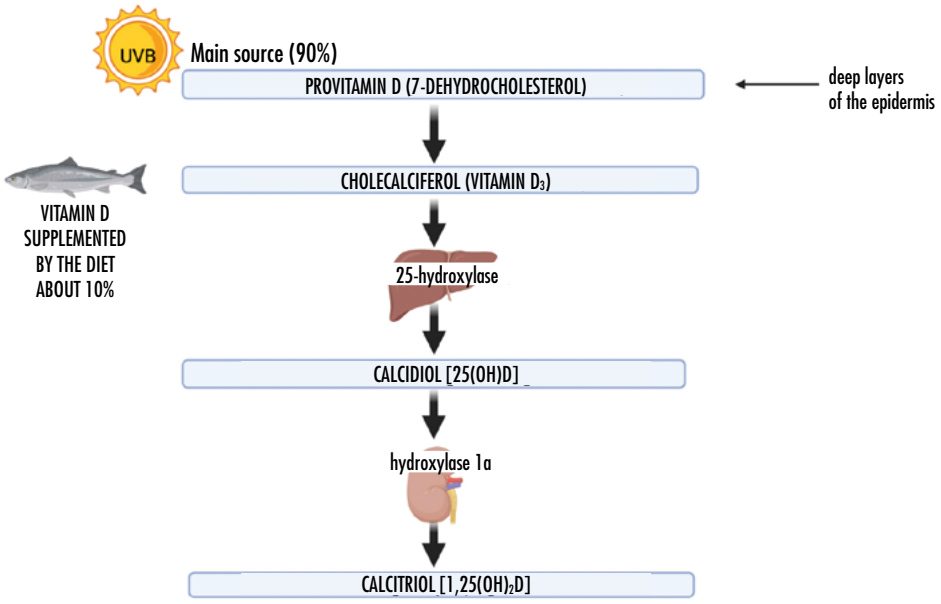

FIGURE 1.
Vitamin D metabolism. The main source (90%) is represented by the conversion of provitamin D in the deep layers of the epidermis, by exposure to solar UVB rays, into cholecalciferol, which will undergo a two-step hydroxylation (first hepatic, then renal) giving rise to the active metabolite, calcitriol.

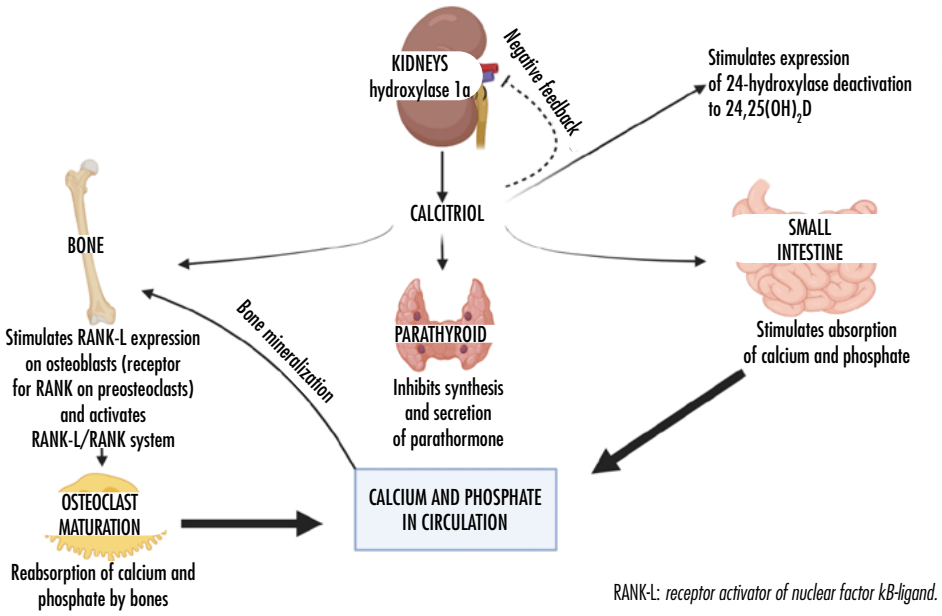

FIGURE 2.
Effects of calcitriol [1,25(OH)2D] on phosphocalcic metabolism.

plemented by the US National Institute of Standards and Technology, NIST), which were considered in several meta-analyses and inevitably coloured their results. The results of 25(OH)D dosage assays done with non-standardised methods showed significant variations when done retrospectively after standardisation.[8]

VITAMIN D AND OSTEOPOROSIS PREVENTION

If on the one hand, a great deal of evidence suggests that correction of hypovitaminosis D reduces the risk of osteoporosis, fragility fractures and falls, especially in the elderly (where hypovitaminosis D is more frequent due to reduced exposure to the sun, lowered capacity for synthesis by the skin and decreased dietary intake), all the more so in the case of medical treatment for osteoporosis,[3] where results of some RCTs (randomised controlled trials) and related meta-analyses do not reveal these benefits, recommending their use only in rare conditions of rickets and osteomalacia.[9] A number of critical issues make these latter conclusions poorly generalizable, starting with the recruitment of the sample, which 7 times out of 10 is characterised by individuals with normal serum 25(OH)D levels at baseline.[10] Since vitamin D is a nutrient, the subjects who would benefit most from supplementation are those most deficient in the nutrient itself, who paradoxically are "scarcely considered" in the trials. This is even more compelling if these subjects are healthy and at low risk of osteoporosis and falls, since they are not likely see an improvement in a risk that is already contained. Moreover, in some cases, sub-analyses referring to groups with vitamin D deficiency and osteoporosis risk showed positive effects after supplementation. A meta-analysis based on RCTs characterised by a population aged >65 years including administration of adequate vitamin D doses at close intervals (at least 800 IU/day, as suggested by the latest recommendations for the elderly population[11] and not in boluses, which might be counterproductive or ineffective [12]), in combination with calcium, showed a significant 15% reduction in total fractures (relative risk, RR = 0.85; 95% confidence interval, CI 0.73-0.98) and 30% fewer femur fractures (RR = 0.70; 95% CI 0.56-0.87) than placebo.[13] Furthermore, the failure to dose 25(OH)D at the endpoint in several studies, considering the variability in dosage and frequency of administration used in the various trials, leaves the doubt that some of the deficient patients did not in any event reach a sufficient vitamin D level at the end of the study, which lessens the reliability of the results. Then again, several RCTs lasted no longer than 12 months, not guaranteeing an adequate observation period to assess long-term effects such as fractures or significant changes in BMD.[3] And we should not forget the already discussed issue of the methods used to measure 25(OH)D levels with no standardisation.[8]

CONCLUSIONS

Based on the foregoing considerations, for the prevention of osteoporosis and its complications, maintenance of 25(OH)D levels above 20 ng/mL (a range of 30-40 ng/mL is desirable, to provide maximum benefits, particularly important for the elderly and those at risk), together with adequate calcium intake, if deficient are required.[14] Those who are vitamin D deficient or whose vitamin D intake is insufficient and those who are at risk of deficiency, benefit most from supplementation. Instead, those with adequate levels of vitamin D already enjoy the benefits of this natural condition. Maintenance dosing of the levels achieved should be provided for the elderly, those at risk of deficiency or who are undergoing treatment for osteoporosis. Needed are RCTs with standardised measurements of 25(OH)D, involving subjects with vitamin D deficiency and at risk of osteoporosis, with assessment of whether normal serum levels are actually achieved after supplementation. Finally, based on Note 96 monitoring, the uncertainty that perhaps reduced consumption in age groups that are at risk may lead to insufficient supplementation seems to emerge. It should be borne in mind that the costs incurred by supplementation are amply covered by the savings linked to avoiding the complications of osteoporosis. Clearly, prevention remains the winning formula, also from the standpoint of costs.

Bibliography

1 Rossini M, Adami S, Bertoldo F, et al. Linee guida per la diagnosi, la prevenzione e il trattamento dell'osteoporosi. Reumatismo 2016;68:1-42.

2 Nota 96 – Monitoraggio andamento dei consumi della nota relativa alla vitamina D. Ufficio Monitoraggio della Spesa Farmaceutica e Rapporti con le Regioni Agenzia Italiana del Farmaco (AIFA). Ultimo dato analizzato: giugno 2021 (data ultimo accesso 27/12/2021). https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_20mesi_22.10.2021.pdf

3 Fassio A, Rossini M, Gatti D. Vitamin D: no efficacy without deficiency. What's new? Reumatismo 2019;71:57-61. https://doi.org/10.4081/reumatismo.2019.1201

4 Holick MF. Vitamin D deficiency N Engl J Med 2007; 357:266-281. https://doi.org/10.1056/NEJMra070553

5 Wimalawansa SJ, Razzaque MS, Al-Daghri NM. Calcium and vitamin D in human health: Hype or real? J Steroid Biochem Mol Biol 2018; 180:4-14. https://doi.org/10.1016/j.jsbmb.2017.12.009

6 Lee DY, Jee JH, Cho YY, et al. Serum 25-hydroxyvitamin D cutoffs for functional bone measures in postmenopausal osteoporosis. Osteoporos Int 2017; 28:1377-1384. https://doi.org/10.1007/s00198-016-3892-0

7 Dai Z, McKenzie JE, McDonald S, et al. Assessment of the methods used to develop vitamin D and calcium recommendations-a systematic review of bone health guidelines. Nutrients 2021;13:2423. https://doi.org/10.3390/nu13072423.

8 Dominguez LJ, Farruggia M, Veronese N, et al. Vitamin D sources, metabolism, and deficiency: available compounds and guidelines for its treatment. Metabolites 2021;11:255. https://doi.org/10.3390/metabo11040255

9 Cavalier E, Bruyère O. Vitamin D for the older patient: from hype to hope? Curr Opin Clin Nutr Metab Care 2020;23:4-7. https://doi.org/10.1097/MCO.0000000000000616

10 10 Bolland MJ, Grey A, Avenell A. Assessment of research waste part 2: wrong study populations- an exemplar of baseline vitamin D status of participants in trials of vitamin D supplementation. BMC Med Res Methodol 2018;18:101. https://doi.org/10.1186/s12874-018-0555-1

11 Bouillon R. Comparative analysis of nutritional guidelines for vitamin D. Nat Rev Endocrinol 2017; 13:466-479. https://doi.org/10.1038/nrendo.2017.31

12 Corrado A, Rotondo C, Cici D, et al. Effects of different vitamin D supplementation schemes in post-menopausal women: a monocentric open-label randomized study. Nutrients 2021;13:380. https://doi.org/10.3390/nu13020380

13 Bischoff-Ferrari HA. Should vitamin D administration for fracture prevention be continued? A discussion of recent meta-analysis findings. Z Gerontol Geriatr. 2019;52:428-432. https://doi.org/10.1007/s00391-019-01573-9

14 Harvey NC, Biver E, Kaufman JM, et al. The role of calcium supplementation in healthy musculoskeletal ageing: an expert consensus meeting of the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO) and the International Foundation for Osteoporosis (IOF). Osteoporos Int. 2017;28:447-462. https://doi.org/10.1007/s00198-016-3773-6

15 Weaver CM, Bischoff-Ferrari HA, Shanahan CJ. Cost-benefit analysis of calcium and vitamin D supplements. Arch Osteoporos 2019;14:50. https://doi.org/10.1007/s11657-019-0589-y

VITAMIN D
UpDates
2022;5(1):8-10
https://doi.org/10.30455/2611-2876-2022-2e

Impact of Italian Medicines Agency Note 96 on the use of vitamin D in Italy

Luca Degli Esposti[1], Margherita Andretta[2]

[1] CliCon S.r.l. Benefit Corporation, Bologna; [2] UOC Assistenza Farmaceutica Territoriale, Azienda ULSS 8 Berica (Berica Local Health Service 8 Territorial Pharmaceutical Assistance Unit), Vicenza

Vitamin D plays a key role in maintaining serum calcium levels required for musculoskeletal health and bone metabolism within their natural physiological range.[1]

Vitamin D ensures proper bone mineralisation. Vitamin D deficiency is a risk factor for skeletal fragility in the elderly and osteoporotic fractures.[2,3] Moreover, scientific studies have shown that Vitamin D supplementation prevents systemic bone loss following a fracture and reduces the risk of multiple fractures.[4,5]

National and international guidelines on the management of osteoporosis recommend adequate calcium and vitamin D supplementation in addition to anti-osteoporotic therapies.[6,7]

AIFA Note 79, in defining which drugs for primary and secondary prevention of the risk of osteoporotic fractures are reimbursable, states that, before starting therapy with these drugs, an adequate intake of calcium and vitamin D is recommended, resorting, where diet and sun exposure are inadequate, to supplements with calcium salts and vitamin D3 (and not its hydroxylated metabolites).[8]

In recent years, a progressive increase in the consumption of vitamin D in Italy, has brought about a consequent increase in expenditure by the National Health Service (NHS).[9,10] The growth in the consumption of Vitamin D led to speculation of possible inappropriate use. Consequently, in late October 2019, AIFA published Note 96 identifying the criteria for the reimbursement of Vitamin D supplementation for the prevention and treatment of vitamin deficiency in adults.[11]

In the first 15 months of application of the Note, there was nearly a 30% decrease in the consumption of and expenditure for Vitamin D compared to previous periods.[12] However, whether this is due to an improvement in the appropriateness of use is not clear.

Recently, CliCon S.r.l. Benefit Corporation, in cooperation with Azienda ULSS Berica 8 Local Health Service, conducted an analysis to verify whether the reduction in vitamin D consumption observed after Note 96 became effective was accompanied by an increase in the appropriateness of the use of these supplements. The results were presented at the last edition of the ISPOR 2021 European Conference.[13] The analysis was performed using the Local Health Service's administrative flows. All adult patients with at least one prescription for the pharmaceutical products in Note 96 (cholecalciferol, cholecalciferol/calcium salts, calcifediol) or in Note 79 (bisphosphonates, teriparatide, strontium ranelate, raloxifene, denosumab, bazedoxifene) in the 12 months before (1/10/2018 to 30/09/2019) and after (1/10/2019 to 30/09/2020) when Note 96 entered into force, were included. Improvement in the appropriateness of prescriptions, measured as a reduction in the deviation between clinical practice and therapeutic recommendations, was assessed using the following indicators:

- indicator 1: proportion of patients treated with drugs for osteoporosis combining Vitamin D (Vitamin D in Note 79, appropriate use);
- indicator 2: proportion of patients treated with Vitamin D without established hypovitaminosis in the last 12 months (Vitamin D out of Note 96, inappropriate use).

In the 12 months pre- and post-Note 96, the calculation of indicator 1, which measures adherence to the reimbursement criteria in Note 79, showed a reduction in the proportion of patients who combine Vitamin D with osteoporosis drugs, from 70.2% to 60.4% of the total number treated with osteoporosis drugs, as shown in Figure 1.

Conversely, no appreciable differences were found in the calculation of indicator 2, which measured the deviation from the reimburse-

Correspondence
Luca Degli Esposti
luca.degliesposti@clicon.it

Conflict of interest
The authors state that there are no conflicts of interest.

How to cite this article: Degli Esposti L, Andretta M. Impact of Italian Medicines Agency Note 96 on the use of vitamin D in Italy. Vitamin D – Updates 2022;5(1):8-10. https://doi.org/10.30455/2611-2876-2022-2e

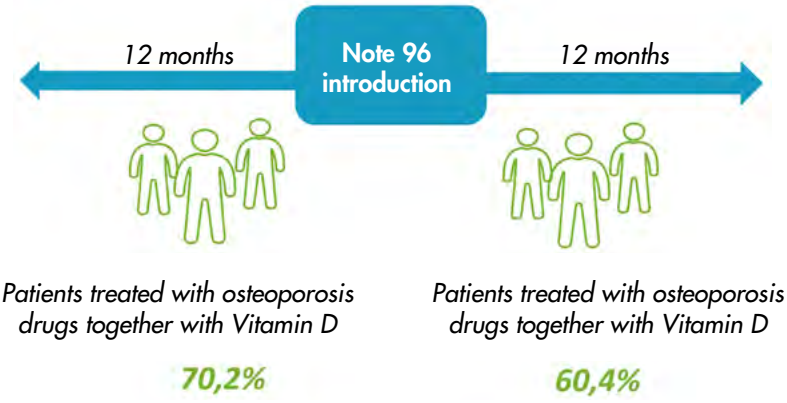

FIGURE 1.
Proportion of patients treated with osteoporosis drugs together with Vitamin D in the 12 months before and after the introduction of Note 96.

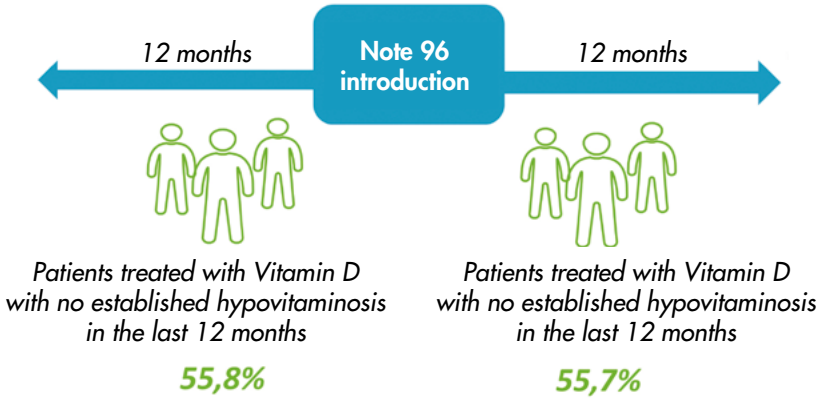

FIGURE 2.
Proportion of patients in the 12 months before and after the introduction of Note 96 treated with Vitamin D with no established hypovitaminosis in the last 12 months (excluding patients in Note 79 for whom the determination of 25(OH)D levels is not envisaged).

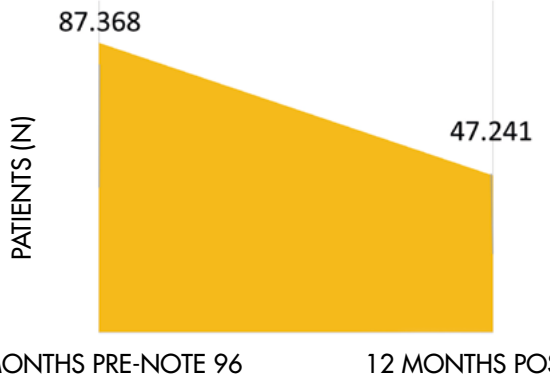

FIGURE 3.
Total number of patients treated with Vitamin D in the 12 months before and after the introduction of Note 96.

ment criteria in Note 96: the proportion of patients treated with vitamin D without ascertained hypovitaminosis in the last 12 months, excluding patients in Note 79 for whom the determination of 25(OH)D levels was not envisaged, remained unchanged (55.8% vs 55.7%), highlighting how, net of osteoporotic patients, more than half of those treated with vitamin D did not have the indications for the drugs being reimbursed (Fig. 2).

Instead, the total number of patients treated with vitamin D was significantly reduced: as illustrated by figure 3, going from 87,368 to 47,041 subjects, with a resulting drop in expenditure (-€1.1 million: -44.8%).

On the whole, the results of the analysis showed a reduction on the use of Vitamin D, determined by a lower number of patients receiving these supplements on a reimbursable basis. Nevertheless, this decrease did not coincide with an improvement in the appropriateness of prescriptions, which, in contrast, declined, especially as regards to its use in combination with osteoporosis drugs. Indeed, while the proportion of patients treated with vitamin D without 25(OH) D detection remained equally high in the two periods, the proportion of patients who combined vitamin D with osteoporosis drugs fell by 10 percentage points. This suggests the need to implement clinical practice monitoring measures to promptly identify actions that will optimise the appropriateness of prescriptions.

The literature has widely acknowledged that inadequate vitamin D supplementation in combination with anti-osteoporotic treatments can reduce the effect of these therapies and lead to an increase in adverse outcomes.[14,15] Several published studies have observed in Italian settings a greater increase in bone density and a significant decrease in fracture risk in post-menopausal women treated with osteoporosis drugs in combination with Vitamin D supplements compared to patients taking only anti-osteoporotic therapies.[14] In addition, a previous retrospective observational study, based on administrative databases from a sample of Local Health Services, conducted on a cohort of osteoporotic patients with a previous fragility fracture, showed a lower incidence rate of re-fracture among patients on calcium/Vitamin D supplementation than among those receiving either osteoporosis medication alone or no treatment for the condition.[16] Moreover, patients receiving calcium/vitamin D supplementation in addition to osteoporosis medication had a 64% reduced risk of developing a subsequent fracture and two times less risk of death compared to the group receiving osteoporosis medication alone.[16] In line clinical outcomes, costs for clinical care for osteoporotic patients receiving calcium/Vitamin D supplementation

were also lower.[17] On the other hand, supplemental vitamin D in situations other than osteoporotic fracture prevention is one of the most hotly debated issues in the medical field, being a source of controversy and beliefs that can also be strongly antithetical. Numerous observational studies of various pathological situations (heart disease, neoplasia, degenerative diseases, respiratory metabolic diseases etc.) have indicated that general health conditions in populations with low vitamin D levels are poor.[18]

However, the results of large-scale randomised clinical trials have not confirmed these hypotheses whilst revealing areas of documented ineffectiveness of vitamin D supplementation, especially in oncology and cardiology. The scientific literature considers a 25(OH)D value of 20 ng/mL (50 nmol/L) to be the limit beyond which adequate intestinal absorption of calcium and control of parathormone levels can be ensured in nearly the entire population. For this reason, it represents the level below which supplementation should be started.

Ultimately, as summarised by the two AIFA Notes, the literature has emphasised the importance of ensuring adequate vitamin D supplementation to prevent osteoporotic fragility fractures, to decrease the incidence of such events, as well as to limit the onerous economic burden associated with them, and that vitamin D should be supplemented in the presence of 25(OH)D values >20 ng/mL in osteoporotic patients.

On this basis, the analysis conducted clearly indicates the need for the appropriateness of vitamin D use to be optimised both for osteoporotic patients per Note 79, for whom vitamin D should be more widely prescribed, and in presumed deficient states, where more than 50% of patients receive supplementation without having had a 25(OH)D dosage, as provided for by Note 96.

The implementation and periodic monitoring of appropriateness indicators, designed to identify uses where there is no indication for use (vitamin D outside Note 96) and areas where there is a recommendation but no prescription (vitamin D in Note 79), offers an opportunity to organise and develop clinical governance and internal monitoring processes, to improve patient care, in the form of clinical audits within the individual local health services. Finally, the involvement of primary care general practitioners would make it possible to identify off-target patients to audit, thus aiding in the reduction of inappropriate prescriptions, resulting in improved patient health and lower healthcare resource consumption.

Bibliography

1. De Martinis M, Allegra A, Sirufo MM, et al. Vitamin D deficiency, osteoporosis and effect on autoimmune diseases and hematopoiesis: a review. Int J Mol Sci 2021;22:8855. https://doi.org/10.3390/ijms22168855.
2. Hewison M. An update on vitamin D and human immunity. Clin Endocrinol (Oxf) 2012;76:315-325. https://doi.org/10.1111/j.1365-2265.2011.04261.x
3. Bouillon R, Marcocci C, Carmeliet G, , et al. Skeletal and extraskeletal actions of vitamin D: current evidence and outstanding questions. Endocr Rev 2019;40:1109-1151. https://doi.org/10.1210/er.2018-00126
4. Chapuy MC, Arlot ME, Duboeuf F, et al. Vitamin D3 and calcium to prevent hip fractures in elderly women. N Engl J Med 1992;327:1637-1642. https://doi.org/10.1056/NEJM199212033272305
5. Wang N, Chen Y, Ji J, et al. The relationship between serum vitamin D and fracture risk in the elderly: a meta-analysis. J Orthop Surg Res 2020;15:81. https://doi.org/10.1186/s13018-020-01603-y
6. Eastell R, Rosen CJ, Black DM, et al. Pharmacological management of osteoporosis in postmenopausal women: an Endocrine Society Clinical Practice Guideline. Clin Endocrinol Metab 2019;104:1595-1622. https://doi.org/10.1210/jc.2019-00221
7. Nuti R, Brandi ML, Checchia G, et al. Guidelines for the management of osteoporosis and fragility fractures. Intern Emerg Med 2019;14:85-102. https://doi.org/10.1007/s11739-018-1874-2
8. Nota 79. Gazzetta Ufficiale della Repubblica Italiana. Serie generale – n. 75. 30 Marzo 2017. Disponibile su: https://www.gazzettaufficiale.it/eli/id/2017/03/30/17A02253/sg
9. Bove M, Colia AL, Dimonte S, et al. Increase in Vitamin D prescriptions in a Southern Italy region over 2011-2015 period. Pharm Adv 2021;3:467. https://doi.org/10.36118/pharmadvances.2021.02
10. Cesareo R, Attanasio R, Caputo M, et al. Italian Association of Clinical Endocrinologists (AME) and Italian Chapter of the American Association of Clinical Endocrinologists (AACE) Position Statement: clinical management of vitamin D deficiency in adults. Nutrients 2018;10:546. https://doi.org/10.3390/nu10050546
11. Nota 96. Disponibile su: https://aifa.gov.it/nota-96
12. Monitoraggio delle Note AIFA. Disponibile su: https://aifa.gov.it/monitoraggio-note-aifa
13. Degli Esposti L, Ghigi A, Nappi C, et al. POSA239 impact of AIFA Note 96 on vitamin D analogs' prescriptive appropriateness. Value in Health 2022;25:S155. DOI:10.1016/j.jval.2021.11.754
14. Adami S, Giannini S, Bianchi G, et al. Vitamin D status and response to treatment in post-menopausal osteoporosis. Osteoporos Int 2009;20:239-244. Https://doi.org/10.1007/s00198-008-0650-y
15. Adami S, Isaia G, Luisetto G, et al. Fracture incidence and characterization in patients on osteoporosis treatment: the ICARO study. J Bone Miner Res 2006;21:1565-1570. https://doi.org/10.1359/jbmr.060715
16. Degli Esposti L, Saragoni S, Sella S, et al. Use of antiosteoporotic drugs and calcium/vitamin D in patients with fragility fractures: impact on re-fracture and mortality risk. Endocrine 2019;64:367-377. DOI:10.1007/s12020-018-1824-9
17. Degli Esposti L, Saragoni S, et al. Economic burden of osteoporotic patients with fracture: effect of treatment with or without calcium/vitamin D supplements. NDS 2020;12:21-30. Https://doi.org/10.2147/NDS.S234911
18. Meehan M, Penckofer S. The role of vitamin D in the aging adult. J Aging Gerontol 2014;2:60-71. https://doi.org/10.12974/2309-6128.2014.02.02.1

VITAMIN D
UpDates
2022;5(1):11-43

BIBLIOGRAPHIC SELECTION

CARDIOLOGY

- Aleksova A, Janjusevic M, Gagno G, et al. The Role of Exercise-Induced Molecular Processes and Vitamin D in Improving Cardiorespiratory Fitness and Cardiac Rehabilitation in Patients With Heart Failure. Front Physiol. 2022 Jan 11;12:794641. https://doi.org/10.3389/fphys.2021.794641. eCollection 2021. PMID: 35087418

- Amirkhizi F, Pishdadian A, Asghari S, et al. Vitamin D status is favorably associated with the cardiovascular risk factors in adults with obesity. Clin Nutr ESPEN. 2021 Dec;46:232-239. https://doi.org/10.1016/j.clnesp.2021.10.003. Epub 2021 Oct 8. PMID: 34857202

- Brosolo G, Da Porto A, Bulfone L, et al. Vitamin D Deficiency Is Associated with Glycometabolic Changes in Nondiabetic Patients with Arterial Hypertension. Nutrients. 2022 Jan 12;14(2):311. https://doi.org/10.3390/nu14020311. PMID: 35057492

- Burgess S, Gill D. Genetic evidence for vitamin D and cardiovascular disease: choice of variants is critical. Eur Heart J. 2021 Dec 31:ehab870. https://doi.org/10.1093/eurheartj/ehab870. Online ahead of print. PMID: 34972215

- Corrigendum to: The Effects of Vitamin D Supplementation and 25-Hydroxyvitamin D Levels on the Risk of Myocardial Infarction and Mortality". J Endocr Soc. 2021 Dec 22;6(1):bvab164. https://doi.org/10.1210/jendso/bvab164. eCollection 2022 Jan 1. PMID: 34988347

- Crescioli C. The Role of Estrogens and Vitamin D in Cardiomyocyte Protection: A Female Perspective. Biomolecules. 2021 Dec 2;11(12):1815. https://doi.org/10.3390/biom11121815. PMID: 34944459

- Dziedzic EA, Smyk W, Sowińska I, et al. Serum Level of Vitamin D Is Associated with Severity of Coronary Atherosclerosis in Postmenopausal Women. Biology (Basel). 2021 Nov 5;10(11):1139. https://doi.org/10.3390/biology10111139. PMID: 34827132

- El Mokadem M, Boshra H, Abd El Hady Y, et al. Relationship of serum vitamin D deficiency with coronary artery disease severity using multislice CT coronary angiography. Clin Investig Arterioscler. 2021 Nov-Dec;33(6):282-288. https://doi.org/10.1016/j.arteri.2021.02.008. Epub 2021 Apr 24. PMID: 33906751

- Elmi C, Fan MM, Le M, et al. Association of serum 25-Hydroxy Vitamin D level with lipid, lipoprotein, and apolipoprotein level. J Community Hosp Intern Med Perspect. 2021 Nov 15;11(6):812-816. https://doi.org/10.1080/20009666.2021.1968571. eCollection 2021. PMID: 34804396

- Emerging Risk Factors Collaboration/EPIC-CVD/Vitamin D Studies Collaboration. Estimating dose-response relationships for vitamin D with coronary heart disease, stroke, and all-cause mortality: observational and Mendelian randomisation analyses. Lancet Diabetes Endocrinol. 2021 Dec;9(12):837-846. https://doi.org/10.1016/S2213-8587(21)00263-1. Epub 2021 Oct 28. PMID: 34717822

- Garcia Carretero R, Vigil-Medina L, et al. Machine learning approaches to constructing predictive models of vitamin D deficiency in a hypertensive population: a comparative study. Inform Health Soc Care. 2021 Dec 2;46(4):355-369. https://doi.org/10.1080/17538157.2021.1896524. Epub 2021 Apr 1. PMID: 33792475

- Hsu S, Prince DK, Williams K, et al. Clinical and biomarker modifiers of vitamin D treatment response: the multi-ethnic study of atherosclerosis. Am J Clin Nutr. 2021 Nov 26:nqab390. https://doi.org/10.1093/ajcn/nqab390. Online ahead of print. PMID: 34849546

- Jani R, Mhaskar K, Tsiampalis T, et al. Circulating 25-hydroxy-vitamin D and the risk of cardiovascular diseases. Systematic review and meta-analysis of prospective cohort studies. Nutr Metab Cardiovasc Dis. 2021 Nov 29;31(12):3282-3304. https://doi.org/10.1016/j.numecd.2021.09.003. Epub 2021 Sep 21. PMID: 34656382

- Janus SE, Durieux JC, Hajjari J, et al. Inflammation mediated Vitamin K and Vitamin D effects on vascular calcifications in people with HIV

on active antiretroviral therapy. AIDS. 2021 Dec 13. https://doi.org/10.1097/QAD.0000000000003149. Online ahead of print. PMID: 34907958

- Karadeniz Y, Özpamuk-Karadeniz F, Ahbab S, et al. Vitamin D Deficiency Is a Potential Risk for Blood Pressure Elevation and the Development of Hypertension. Medicina (Kaunas). 2021 Nov 25;57(12):1297. https://doi.org/10.3390/medicina57121297. PMID: 34946242

- Martín Giménez VM, Chuffa LGA, Simão VA, et al. Protective actions of vitamin D, anandamide and melatonin during vascular inflammation: Epigenetic mechanisms involved. Life Sci. 2022 Jan 1;288:120191. https://doi.org/10.1016/j.lfs.2021.120191. Epub 2021 Nov 29. PMID: 34856208 Review.

- Moradi A, Maroofi A, Hemati M, et al. Inhibition of GTPase Rac1 expression by vitamin D mitigates pressure overload-induced cardiac hypertrophy. Int J Cardiol Heart Vasc. 2021 Nov 30;37:100922. https://doi.org/10.1016/j.ijcha.2021.100922. eCollection 2021 Dec. PMID: 34917751

- Scrimieri R, Cazzaniga A, Castiglioni S, et al. Vitamin D Prevents High Glucose-Induced Lipid Droplets Accumulation in Cultured Endothelial Cells: The Role of Thioredoxin Interacting Protein. Biomedicines. 2021 Dec 10;9(12):1874. https://doi.org/10.3390/biomedicines9121874. PMID: 34944690

- Sioka C. Cardiovascular diseases, imaging, treatments and Vitamin D deficiency. Vascul Pharmacol. 2022 Jan 20;143:106956. https://doi.org/10.1016/j.vph.2022.106956. Online ahead of print. PMID: 35065298 Review.

- Su H, Liu N, Zhang Y, et al. Vitamin D/VDR regulates peripheral energy homeostasis via central renin-angiotensin system. J Adv Res. 2021 Feb 2;33:69-80. https://doi.org/10.1016/j.jare.2021.01.011. eCollection 2021 Nov. PMID: 34603779

- Su S, Wang L, Tang X, et al. Vitamin D deficiency in diabetes exacerbates longitudinal risk for atherosclerotic cardiovascular disease in Lanzhou, China. Asia Pac J Clin Nutr. 2021 Dec;30(4):557-565. https://doi.org/10.6133/apjcn.202112_30(4).0001. PMID: 34967183

- Tao J, Lou F, Liu Y. The Role of Vitamin D in the Relationship Between Gender and Deep Vein Thrombosis Among Stroke Patients. Front Nutr. 2021 Dec 2;8:755883. https://doi.org/10.3389/fnut.2021.755883. eCollection 2021. PMID: 34926545

- Verdoia M, Viglione F, Boggio A, et al. Relationship between vitamin D and cholesterol levels in STEMI patients undergoing primary percutaneous coronary intervention. Nutr Metab Cardiovasc Dis. 2021 Dec 4:S0939-4753(21)00555-X. https://doi.org/10.1016/j.numecd.2021.11.014. Online ahead of print. PMID: 35078678

- Wee CL, Mokhtar SS, Banga Singh KK, et al. Vitamin D deficiency attenuates endothelial function by reducing antioxidant activity and vascular eNOS expression in the rat microcirculation. Microvasc Res. 2021 Nov;138:104227. https://doi.org/10.1016/j.mvr.2021.104227. Epub 2021 Jul 27. PMID: 34324883

- Wolf ST, Kenney WL. Skin pigmentation and vitamin D-folate interactions in vascular function: an update. Curr Opin Clin Nutr Metab Care. 2021 Nov 1;24(6):528-535. https://doi.org/10.1097/MCO.0000000000000788. PMID: 34456246 Review.

- Zhang W, Yi J, Liu D, et al. The effect of vitamin D on the lipid profile as a risk factor for coronary heart disease in postmenopausal women: a meta-analysis and systematic review of randomized controlled trials. Exp Gerontol. 2022 Jan 26;161:111709. https://doi.org/10.1016/j.exger.2022.111709. Online ahead of print. PMID: 35090975 Review.

- Zhou A, Selvanayagam JB, Hyppönen E. Non-linear Mendelian randomization analyses support a role for vitamin D deficiency in cardiovascular disease risk. Eur Heart J. 2021 Dec 5:ehab809. https://doi.org/10.1093/eurheartj/ehab809. Online ahead of print. PMID: 34891159

- Zhou W, Wang W, Yuan XJ, et al. The Effects of RBP4 and Vitamin D on the Proliferation and Migration of Vascular Smooth Muscle Cells via the JAK2/STAT3 Signaling Pathway. Oxid Med Cell Longev. 2022 Jan 17;2022:3046777. https://doi.org/10.1155/2022/3046777. eCollection 2022. PMID: 35082965

CORONAVIRUS DISEASE

- Abdollahzadeh R, Shushizadeh MH, Barazandehrokh M, et al. Association of Vitamin D receptor gene polymorphisms and clinical/severe outcomes of COVID-19 patients. Infect Genet Evol. 2021 Dec;96:105098. https://doi.org/10.1016/j.meegid.2021.105098. Epub 2021 Oct 2. PMID: 34610433

- Abdrabbo M, Birch CM, Brandt M, et al. Vitamin D and COVID-19: A review on the role of vitamin D in preventing and reducing the severity of COVID-19 infection. Protein Sci. 2021 Nov;30(11):2206-2220. https://doi.org/10.1002/pro.4190. Epub 2021 Oct 4. PMID: 34558135

- Ainine A, Heward E, Kapasi R, et al. Vitamin D and COVID-19 Infection. Med J Malaysia. 2021 Nov;76(6):881-883. PMID: 34806677

- Al-Kaleel A, Al-Gailani L, Demir M, et al. Vitamin D may prevent COVID-19 induced pregnancy complication. Med Hypotheses. 2021 Nov 9;158:110733. https://doi.org/10.1016/j.mehy.2021.110733. Online ahead of print. PMID: 34784554

- Alberca GGF, Alberca RW. Role of vitamin D deficiency and comorbidities in COVID-19. World J Virol. 2022 Jan 25;11(1):85-89. https://doi.org/10.5501/wjv.v11.i1.85. PMID: 35117974

- AlKhafaji D, Al Argan R, Albaker W, et al. The Impact of Vitamin D Level on the Severity and Outcome of Hospitalized Patients with COVID-19 Disease. Int J Gen Med. 2022 Jan 7;15:343-352. https://doi.org/10.2147/IJGM.S346169. eCollection 2022. PMID: 35027842

- Annweiler C. The COVID-19 era recalls the importance of ensuring sufficient vitamin D status in the general population. J Steroid Biochem Mol Biol. 2021 Nov;214:105959. https://doi.org/10.1016/j.jsbmb.2021.105959. Epub 2021 Jul 30. PMID: 34339829

- Apaydin T, Polat H, Dincer Yazan C, et al. Effects of vitamin D receptor gene polymorphisms on the prognosis of COVID-19. Clin Endocrinol (Oxf). 2021 Dec 17. https://doi.org/10.1111/cen.14664. Online ahead of print. PMID: 34919268

- Asghar MS, Yasmin F, Dapke K, et al. Evaluation of Vitamin-D Status and Its Association with Clinical Outcomes Among COVID-19 Patients in Pakistan. Am J Trop Med Hyg. 2021 Nov 10;106(1):150-155. https://doi.org/10.4269/ajtmh.21-0577. PMID: 34758449

- Atanasovska E, Petrusevska M, Zendelovska D, et al. Vitamin D levels and oxidative stress markers in patients hospitalized with COVID-19. Redox Rep. 2021 Dec;26(1):184-189. https://doi.org/10.1080/13510002.2021.1999126. PMID: 34727009
- Aygun H. Vitamin D can reduce severity in COVID-19 through regulation of PD-L1. Naunyn Schmiedebergs Arch Pharmacol. 2022 Jan 31:1-8. https://doi.org/10.1007/s00210-022-02210-w. Online ahead of print. PMID: 35099571
- Azzam AY, Ghozy S, Azab MA. Vitamin D and its' role in Parkinson's disease patients with SARS-CoV-2 infection. A review article. Interdiscip Neurosurg. 2022 Mar;27:101441. https://doi.org/10.1016/j.inat.2021.101441. Epub 2021 Nov 28. PMID: 34868885
- Bae JH, Choe HJ, Holick MF, et al. Association of vitamin D status with COVID-19 and its severity : Vitamin D and COVID-19: a narrative review. Rev Endocr Metab Disord. 2022 Jan 4:1-21. https://doi.org/10.1007/s11154-021-09705-6. Online ahead of print. PMID: 34982377
- Bahat G, Erbas Sacar D, Petrovic M. Vitamin D in patients with COVID-19: is there a room for it? Acta Clin Belg. 2021 Dec 20:1-7. https://doi.org/10.1080/17843286.2021.2018832. Online ahead of print. PMID: 34927562
- Bakaloudi DR, Chourdakis M. A critical update on the role of mild and serious vitamin D deficiency prevalence and the COVID-19 epidemic in Europe. Nutrition. 2022 Jan;93:111441. https://doi.org/10.1016/j.nut.2021.111441. Epub 2021 Jul 30. PMID: 34492624
- Bakaloudi DR, Chourdakis M. Letter to the editor: "Revisiting the role of vitamin D levels in the prevention of COVID-19 infection and mortality in European countries post infections peak". Aging Clin Exp Res. 2021 Dec;33(12):3391-3392. https://doi.org/10.1007/s40520-021-01975-z. Epub 2021 Sep 16. PMID: 34529263
- Bayraktar N, Turan H, Bayraktar M, et al. Analysis of serum cytokine and protective vitamin D levels in severe cases of COVID-19. J Med Virol. 2022 Jan;94(1):154-160. https://doi.org/10.1002/jmv.27294. Epub 2021 Aug 30. PMID: 34427934
- Bianconi V, Mannarino MR, Figorilli F, et al. Prevalence of vitamin D deficiency and its prognostic impact on patients hospitalized with COVID-19. Nutrition. 2021 Nov-Dec;91-92:111408. https://doi.org/10.1016/j.nut.2021.111408. Epub 2021 Jul 1. PMID: 34388589
- Bikle DD. Vitamin D regulation of immune function during covid-19. Rev Endocr Metab Disord. 2022 Jan 29:1-7. https://doi.org/10.1007/s11154-021-09707-4. Online ahead of print. PMID: 35091881
- Bouillon R, Quesada-Gomez JM. Vitamin D Endocrine System and COVID-19. JBMR Plus. 2021 Nov 17;5(12):e10576. https://doi.org/10.1002/jbm4.10576. eCollection 2021 Dec. PMID: 34950831
- Brandão CMÁ, Chiamolera MI, Biscolla RPM, et al. No association between vitamin D status and COVID-19 infection in Sao Paulo, Brazil. Arch Endocrinol Metab. 2021 Nov 3;65(3):381-385. https://doi.org/10.20945/2359-3997000000343. Epub 2021 Mar 19. PMID: 33740339
- Brito DTM, Ribeiro LHC, Daltro CHDC, et al. The possible benefits of vitamin D in COVID-19. Nutrition. 2021 Nov-Dec;91-92:111356. https://doi.org/10.1016/j.nut.2021.111356. Epub 2021 May 26. PMID: 34352586
- Caballero-García A, Noriega DC, Bello HJ, et al. The Immunomodulatory Function of Vitamin D, with Particular Reference to SARS-CoV-2. Medicina (Kaunas). 2021 Dec 2;57(12):1321. https://doi.org/10.3390/medicina57121321. PMID: 34946266
- Cara KC, Beauchesne AR, Li R, et al. Cochrane Review Summary on "Vitamin D Supplementation for the Treatment of COVID-19: A Living Systematic Review". J Diet Suppl. 2022;19(1):143-145. https://doi.org/10.1080/19390211.2022.2008601. Epub 2021 Nov 28. PMID: 34842035 Review.
- Chetty VV, Chetty M. Potential benefit of vitamin D supplementation in people with respiratory illnesses, during the COVID-19 pandemic. Clin Transl Sci. 2021 Nov;14(6):2111-2116. https://doi.org/10.1111/cts.13044. Epub 2021 Nov 2. PMID: 34057814
- Chillon TS, Demircan K, Heller RA, et al. Relationship between Vitamin D Status and Antibody Response to COVID-19 mRNA Vaccination in Healthy Adults. Biomedicines. 2021 Nov 18;9(11):1714. https://doi.org/10.3390/biomedicines9111714. PMID: 34829945
- Chiodini I, Gatti D, Soranna D, et al. Vitamin D Status and SARS-CoV-2 Infection and COVID-19 Clinical Outcomes. Front Public Health. 2021 Dec 22;9:736665. https://doi.org/10.3389/fpubh.2021.736665. eCollection 2021. PMID: 35004568
- Cimmino G, Conte S, Morello M, et al. Vitamin D Inhibits IL-6 Pro-Atherothrombotic Effects in Human Endothelial Cells: A Potential Mechanism for Protection against COVID-19 Infection? J Cardiovasc Dev Dis. 2022 Jan 13;9(1):27. https://doi.org/10.3390/jcdd9010027. PMID: 35050236
- Contreras-Bolívar V, García-Fontana B, García-Fontana C, et al. Vitamin D and COVID-19: where are we now? Postgrad Med. 2021 Dec 27:1-13. https://doi.org/10.1080/00325481.2021.2017647. Online ahead of print. PMID: 34886758
- da Rocha AP, Atallah AN, Aldrighi JM, et al. Insufficient evidence for vitamin D use in COVID-19: A rapid systematic review. Int J Clin Pract. 2021 Nov;75(11):e14649. https://doi.org/10.1111/ijcp.14649. Epub 2021 Aug 18. PMID: 34310814
- Dawson-Hughes B. Role of Vitamin D in COVID-19: Active or Passive? J Clin Endocrinol Metab. 2021 Nov 19;106(12):e5260-e5261. https://doi.org/10.1210/clinem/dgab505. PMID: 34232288
- Deng YC, Tang XC, Li X, et al. An investigation of vitamin D nutritional status in children after outbreak of coronavirus disease 2019. Zhongguo Dang Dai Er Ke Za Zhi. 2021 Nov 15;23(11):1091-1096. https://doi.org/10.7499/j.issn.1008-8830.2106155. PMID: 34753539
- Derakhshanian H, Rastad H, Ghosh S, et al. The predictive power of serum vitamin D for poor outcomes in COVID-19 patients. Food Sci Nutr. 2021 Sep 19;9(11):6307-6313. https://doi.org/10.1002/fsn3.2591. eCollection 2021 Nov. PMID: 34760260
- Dhawan M, Priyanka, Choudhary OP. Immunomodulatory and therapeutic implications of vitamin D in the management of COVID-19. Hum Vaccin Immunother. 2022 Jan 24:1-5. https://doi.org/10.1080/21645515.2022.2025734. Online ahead of print. PMID: 35072581

- di Filippo L, Allora A, Doga M, et al. Vitamin D Levels Are Associated With Blood Glucose and BMI in COVID-19 Patients, Predicting Disease Severity. J Clin Endocrinol Metab. 2022 Jan 1;107(1):e348-e360. https://doi.org/10.1210/clinem/dgab599. PMID: 34383926
- di Filippo L, Allora A, Locatelli M, et al. Hypocalcemia in COVID-19 is associated with low vitamin D levels and impaired compensatory PTH response. Endocrine. 2021 Nov;74(2):219-225. https://doi.org/10.1007/s12020-021-02882-z. Epub 2021 Sep 29. PMID: 34586582
- Dissanayake HA, de Silva NL, Sumanatilleke M, et al. Prognostic and therapeutic role of vitamin D in COVID-19: systematic review and meta-analysis. J Clin Endocrinol Metab. 2021 Dec 11:dgab892. https://doi.org/10.1210/clinem/dgab892. Online ahead of print. PMID: 34894254
- Ebrahimzadeh A, Mohseni S, Narimani B, et al. Association between vitamin D status and risk of covid-19 in-hospital mortality: A systematic review and meta-analysis of observational studies. Crit Rev Food Sci Nutr. 2021 Dec 9:1-11. https://doi.org/10.1080/10408398.2021.2012419. Online ahead of print. PMID: 34882024
- Efird JT, Anderson EJ, Jindal C, et al. The Interaction of Vitamin D and Corticosteroids: A Mortality Analysis of 26,508 Veterans Who Tested Positive for SARS-CoV-2. Int J Environ Res Public Health. 2021 Dec 31;19(1):447. https://doi.org/10.3390/ijerph19010447. PMID: 35010701
- Farid N, Rola N, Koch EAT, et al. Active vitamin D supplementation and COVID-19 infections: review. Ir J Med Sci. 2021 Nov;190(4):1271-1274. https://doi.org/10.1007/s11845-020-02452-8. Epub 2021 Jan 6. PMID: 33409846
- Gallelli L, Mannino GC, Luciani F, et al. Vitamin D Serum Levels in Subjects Tested for SARS-CoV-2: What Are the Differences among Acute, Healed, and Negative COVID-19 Patients? A Multicenter Real-Practice Study. Nutrients. 2021 Nov 3;13(11):3932. https://doi.org/10.3390/nu13113932. PMID: 34836187
- Ghanbari-Afra L, Azizi-Fini I. Commentary to "Vitamin D and survival in COVID-19 patients: A quasi-experimental study" by C. Annweiler et al, JSBMB, 2021. J Steroid Biochem Mol Biol. 2021 Nov;214:105960. https://doi.org/10.1016/j.jsbmb.2021.105960. Epub 2021 Aug 5. PMID: 34364979
- Ghasemian R, Shamshirian A, Heydari K, et al. The role of vitamin D in the age of COVID-19: A systematic review and meta-analysis. Int J Clin Pract. 2021 Nov;75(11):e14675. https://doi.org/10.1111/ijcp.14675. Epub 2021 Aug 6. PMID: 34322971
- Gönen MS, Alaylıoğlu M, Durcan E, et al. Rapid and Effective Vitamin D Supplementation May Present Better Clinical Outcomes in COVID-19 (SARS-CoV-2) Patients by Altering Serum INOS1, IL1B, IFNg, Cathelicidin-LL37, and ICAM1. Nutrients. 2021 Nov 12;13(11):4047. https://doi.org/10.3390/nu13114047. PMID: 34836309
- Grant WB, Lordan R. Vitamin D for COVID-19 on Trial: An Update on Prevention and Therapeutic Application. Endocr Pract. 2021 Dec;27(12):1266-1268. https://doi.org/10.1016/j.eprac.2021.10.001. Epub 2021 Oct 11. PMID: 34648940
- Grant WB. Vitamin D's Role in Reducing Risk of SARS-CoV-2 and COVID-19 Incidence, Severity, and Death. Nutrients. 2021 Dec 31;14(1):183. https://doi.org/10.3390/nu14010183. PMID: 35011058
- Habib SS, Alhalabi HB, Alharbi KS, et al. Knowledge attitude and practices of university students to Vitamin D and Vitamin D supplements during times of low sun exposure and post lockdown. Eur Rev Med Pharmacol Sci. 2021 Dec;25(23):7297-7305. https://doi.org/10.26355/eurrev_202112_27423. PMID: 34919229
- Hosseini SJ, Moradi B, Marhemati M, et al. Comparing Serum Levels of Vitamin D and Zinc in Novel Coronavirus-Infected Patients and Healthy Individuals in Northeastern Iran, 2020. Infect Dis Clin Pract (Baltim Md). 2021 Nov;29(6):e390-e394. https://doi.org/10.1097/IPC.0000000000001051. Epub 2021 Aug 4. PMID: 34803346
- Israel A, Cicurel A, Feldhamer I, et al. Vitamin D deficiency is associated with higher risks for SARS-CoV-2 infection and COVID-19 severity: a retrospective case-control study. Intern Emerg Med. 2022 Jan 9:1-11. https://doi.org/10.1007/s11739-021-02902-w. Online ahead of print. PMID: 35000118
- Jenei T, Jenei S, Tamás LT, et al. COVID-19 mortality is associated with low vitamin D levels in patients with risk factors and/or advanced age. Clin Nutr ESPEN. 2022 Feb;47:410-413. https://doi.org/10.1016/j.clnesp.2021.11.025. Epub 2021 Nov 24. PMID: 35063235
- Jude EB. Response to Letter to the Editor from Speeckaert et al: "Vitamin D Deficiency Is Associated With Higher Hospitalisation Risk from COVID-19: A Retrospective Case-Control Study". J Clin Endocrinol Metab. 2022 Jan 1;107(1):e442. https://doi.org/10.1210/clinem/dgab607. PMID: 34529783
- Kolls JK, Garry RF. Role of the T cell vitamin D receptor in severe COVID-19. Nat Immunol. 2022 Jan;23(1):5-6. https://doi.org/10.1038/s41590-021-01098-7. PMID: 34931078
- López-Castro J. Coronavirus disease-19 Pandemic and Vitamin D: So Much for so Little? Rev Invest Clin. 2021 Nov 5;73(6):408. https://doi.org/10.24875/RIC.21000305. PMID: 34341590
- Loucera C, Peña-Chilet M, Esteban-Medina M, et al. Real world evidence of calcifediol or vitamin D prescription and mortality rate of COVID-19 in a retrospective cohort of hospitalized Andalusian patients. Sci Rep. 2021 Dec 3;11(1):23380. https://doi.org/10.1038/s41598-021-02701-5. PMID: 34862422
- Ma W, Nguyen LH, Yue Y, et al. Associations between predicted vitamin D status, vitamin D intake, and risk of SARS-CoV-2 infection and Coronavirus Disease 2019 severity. Am J Clin Nutr. 2021 Dec 3:nqab389. https://doi.org/10.1093/ajcn/nqab389. Online ahead of print. PMID: 34864844
- Mohd Saffian S. Vitamin D Supplementation Should Be Considered for the Treatment of COVID-19 Infection in Malaysia in View of the High Prevalence of Vitamin D Deficiency. Malays J Med Sci. 2021 Dec;28(6):194-196. https://doi.org/10.21315/mjms2021.28.6.15. Epub 2021 Dec 22. PMID: 35002499
- Mukherjee SB, Gorohovski A, Merzon E, et al. Seasonal UV exposure and vitamin D: association with the dynamics of COVID-19 transmission in Europe. FEBS Open Bio.

2022 Jan;12(1):106-117. https://doi.org/10.1002/2211-5463.13309. Epub 2021 Dec 4. PMID: 34608759

- Nabi-Afjadi M, Karami H, Goudarzi K, et al. The effect of vitamin D, magnesium and zinc supplements on interferon signaling pathways and their relationship to control SARS-CoV-2 infection. Clin Mol Allergy. 2021 Nov 8;19(1):21. https://doi.org/10.1186/s12948-021-00161-w. PMID: 34749737
- Notz Q, Stoppe C. Reply - Letter to the Editor: Vitamin D deficiency in critically ill COVID-19 ARDS patients. Clin Nutr. 2022 Jan 17:S0261-5614(22)00008-5. https://doi.org/10.1016/j.clnu.2022.01.006. Online ahead of print. PMID: 35120775
- Oristrell J, Oliva JC, Casado E, et al. Vitamin D supplementation and COVID-19 risk: a population-based, cohort study. J Endocrinol Invest. 2022 Jan;45(1):167-179. https://doi.org/10.1007/s40618-021-01639-9. Epub 2021 Jul 17. PMID: 34273098
- Pal R, Banerjee M, Bhadada SK, et al. Vitamin D supplementation and clinical outcomes in COVID-19: a systematic review and meta-analysis. J Endocrinol Invest. 2022 Jan;45(1):53-68. https://doi.org/10.1007/s40618-021-01614-4. Epub 2021 Jun 24. PMID: 34165766
- Panteli AE, Theofilis P, Vordoni A, et al. Narrative review of recent studies on the role of vitamin D in the prevention of cardiac and renal risk and additional considerations for COVID-19 vulnerability. Curr Vasc Pharmacol. 2021 Nov 19. https://doi.org/10.2174/1570161119666211119142746. Online ahead of print. PMID: 34802405
- Pedrosa LFC, Barros ANAB, Leite-Lais L. Nutritional risk of vitamin D, vitamin C, zinc, and selenium deficiency on risk and clinical outcomes of COVID-19: A narrative review. Clin Nutr ESPEN. 2022 Feb;47:9-27. https://doi.org/10.1016/j.clnesp.2021.11.003. Epub 2021 Nov 6. PMID: 35063248
- Pierucci P, Quaranta VN, Dragonieri S, et al. Moderate to severe vitamin D deficiency increases the risk of mortality due to COVID-19 in patients treated in a respiratory intensive care unit. Pol Arch Intern Med. 2021 Dec 22;131(12). https://doi.org/10.20452/pamw.16119. Epub 2021 Oct 13. PMID: 34643077
- Popli H, Gupta A, Singh V, et al. Are Low Serum Vitamin D Levels a Risk Factor for Advent of COVID-19 Associated Rhinocerebral Mucormycosis: A Preliminary Case Control Study. Indian J Otolaryngol Head Neck Surg. 2022 Jan 11:1-5. https://doi.org/10.1007/s12070-022-03080-7. Online ahead of print. PMID: 35036352
- Rahemtoola MS, Suhotoo MJR. Commentary on "Vitamin D deficiency and COVID-19: A case-control study at a tertiary care hospital in India". Ann Med Surg (Lond). 2021 Dec;72:102783. https://doi.org/10.1016/j.amsu.2021.102783. Epub 2021 Sep 9. PMID: 34518781
- Regalia A, Benedetti M, Malvica S, et al. Vitamin D Status and SARS-CoV-2 Infection in a Cohort of Kidney Transplanted Patients. Nutrients. 2022 Jan 13;14(2):317. https://doi.org/10.3390/nu14020317. PMID: 35057498
- Ribeiro HG, Dantas-Komatsu RCS, Medeiros JFP, et al. Previous vitamin D status and total cholesterol are associated with SARS-CoV-2 infection. Clin Chim Acta. 2021 Nov;522:8-13. https://doi.org/10.1016/j.cca.2021.08.003. Epub 2021 Aug 5. PMID: 34364853
- Saxena P, Nigam K, Mukherjee S, et al. Relation of vitamin D to COVID-19. J Virol Methods. 2021 Dec 14;301:114418. https://doi.org/10.1016/j.jviromet.2021.114418. Online ahead of print. PMID: 34919979
- Schmitt G, Labdouni S, Soulimani R, et al. Oxidative stress status and vitamin D levels of asymptomatic to mild symptomatic COVID-19 infections during the third trimester of pregnancy: A retrospective study in Metz, France. J Med Virol. 2022 Jan 21. https://doi.org/10.1002/jmv.27606. Online ahead of print. PMID: 35060637
- Seal KH, Bertenthal D, Carey E, et al. Association of Vitamin D Status and COVID-19-Related Hospitalization and Mortality. J Gen Intern Med. 2022 Jan 1:1-9. https://doi.org/10.1007/s11606-021-07170-0. Online ahead of print. PMID: 34981368
- Sergeev IN. Vitamin D and COVID-19: How Much Vitamin D Does a Man Need? Nutrients. 2021 Nov 29;13(12):4311. https://doi.org/10.3390/nu13124311. PMID: 34959863
- Seven B, Gunduz O, Ozgu-Erdinc AS, et al. Correlation between 25-hydroxy vitamin D levels and COVID-19 severity in pregnant women: a cross-sectional study. J Matern Fetal Neonatal Med. 2021 Nov 23:1-6. https://doi.org/10.1080/14767058.2021.2005564. Online ahead of print. PMID: 34812699
- Shah K, Varna VP, Pandya A, et al. Low vitamin D levels and prognosis in a COVID-19 pediatric population: a systematic review. QJM. 2021 Nov 5;114(7):447-453. https://doi.org/10.1093/qjmed/hcab202. PMID: 34293161
- Shakeri H, Azimian A, Ghasemzadeh-Moghaddam H, et al. Evaluation of the relationship between serum levels of zinc, vitamin B12, vitamin D, and clinical outcomes in patients with COVID-19. J Med Virol. 2022 Jan;94(1):141-146. https://doi.org/10.1002/jmv.27277. Epub 2021 Aug 21. PMID: 34406674
- Shenoy S. Gut microbiome, Vitamin D, ACE2 interactions are critical factors in immune-senescence and inflammaging: key for vaccine response and severity of COVID-19 infection. Inflamm Res. 2022 Jan;71(1):13-26. https://doi.org/10.1007/s00011-021-01510-w. Epub 2021 Nov 5. PMID: 34738147
- Sodri NI, Mohamed-Yassin MS, Mohd Nor NS, et al. Rickets Due to Severe Vitamin D and Calcium Deficiency During the COVID-19 Pandemic in Malaysia. Am J Case Rep. 2021 Nov 1;22:e934216. https://doi.org/10.12659/AJCR.934216. PMID: 34723934
- Soltani-Zangbar MS, Mahmoodpoor A, Dolati S, et al. Serum levels of vitamin D and immune system function in patients with COVID-19 admitted to intensive care unit. Gene Rep. 2022 Mar;26:101509. https://doi.org/10.1016/j.genrep.2022.101509. Epub 2022 Jan 15. PMID: 35071823
- Speeckaert MM, Delanghe JR. Influence of the vitamin D binding protein polymorphisms on the relationship between vitamin D status and the severity of COVID-19 in pregnant women. J Matern Fetal Neonatal Med. 2022 Jan 25:1-2. https://doi.org/10.1080/14767058.2022.2028771. Online ahead of print. PMID: 35073815
- Speeckaert MM, Delanghe JR. Letter to the Editor from Speeckaert et al: "Vitamin D Deficiency Is Associated With Higher Hospitalization Risk from COVID-19: a Retrospective Case-control Study". J Clin Endocrinol

Metab. 2022 Jan 1;107(1):e432-e433. https://doi.org/10.1210/clinem/dgab606. PMID: 34529788

- Subramanian S, Rhodes JM, Taylor JM, et al. Vitamin D, D-binding protein, free vitamin D and COVID-19 mortality in hospitalized patients. Am J Clin Nutr. 2022 Jan 31:nqac027. https://doi.org/10.1093/ajcn/nqac027. Online ahead of print. PMID: 35102371

- Tentolouris N, Samakidou G, Eleftheriadou I, et al. The effect of vitamin D supplementation on mortality and intensive care unit admission of COVID-19 patients. A systematic review, meta-analysis and meta-regression. Diabetes Metab Res Rev. 2021 Dec 29:e3517. https://doi.org/10.1002/dmrr.3517. Online ahead of print. PMID: 34965318

- Ünsal YA, Gül ÖÖ, Cander S, et al. Retrospective analysis of vitamin D status on inflammatory markers and course of the disease in patients with COVID-19 infection. J Endocrinol Invest. 2021 Dec;44(12):2601-2607. https://doi.org/10.1007/s40618-021-01566-9. Epub 2021 Apr 5. PMID: 33818731

- Verma S, Chaturvedi V, Ganguly NK, et al. Vitamin D deficiency: concern for rheumatoid arthritis and COVID-19? Mol Cell Biochem. 2021 Dec;476(12):4351-4362. https://doi.org/10.1007/s11010-021-04245-8. Epub 2021 Aug 28. PMID: 34453644

- Viani-Walsh D, Kennedy-Williams S, Taylor D, et al. Vitamin D deficiency in schizophrenia implications for COVID-19 infection. Ir J Psychol Med. 2021 Dec;38(4):278-287. https://doi.org/10.1017/ipm.2020.107. Epub 2020 Sep 11. PMID: 32912355

- Visser MPJ, Dofferhoff ASM, van den Ouweland JMW, et al. Effects of Vitamin D and K on Interleukin-6 in COVID-19. Front Nutr. 2022 Jan 17;8:761191. https://doi.org/10.3389/fnut.2021.761191. eCollection 2021. PMID: 35111793

- Wenban C, Heer RS, Baktash V, et al. Dexamethasone treatment may mitigate adverse effects of vitamin D deficiency in hospitalized Covid-19 patients. J Med Virol. 2021 Dec;93(12):6605-6610. https://doi.org/10.1002/jmv.27215. Epub 2021 Aug 11. PMID: 34273116

- Wu CC, Lu KC. Vitamin D deficiency and inactivated SARS-CoV-2 vaccines. Eur J Intern Med. 2021 Nov;93:114. https://doi.org/10.1016/j.ejim.2021.09.005. Epub 2021 Sep 9. PMID: 34521583

- Ye K, Tang F, Liao X, et al. Does Serum Vitamin D Level Affect COVID-19 Infection and Its Severity?-A Case-Control Study. J Am Coll Nutr. 2021 Nov-Dec;40(8):724-731. https://doi.org/10.1080/07315724.2020.1826005. Epub 2020 Oct 13. PMID: 33048028

DERMATOLOGY

- Ahmed Mohamed A, Salah Ahmed EM, Abdel-Aziz RTA, et al. The impact of active vitamin D administration on the clinical outcomes of acne vulgaris. J Dermatolog Treat. 2021 Nov;32(7):756-761. https://doi.org/10.1080/09546634.2019.1708852. Epub 2020 Jan 3. PMID: 31868550 Clinical Trial.

- Brożyna AA, Żmijewski MA, Linowiecka K, et al. Disturbed expression of vitamin D and retinoic acid-related orphan receptors alpha and gamma and of megalin in inflammatory skin diseases. Exp Dermatol. 2022 Jan 7. https://doi.org/10.1111/exd.14521. Online ahead of print. PMID: 34995387

- Carlberg C. Vitamin D and Pigmented Skin. Nutrients. 2022 Jan 13;14(2):325. https://doi.org/10.3390/nu14020325. PMID: 35057504

- Fabbrocini G, Marasca C, Luciano MA, et al. Vitamin D deficiency and hidradenitis suppurativa: the impact on clinical severity and therapeutic responsivity. J Dermatolog Treat. 2021 Nov;32(7):843-844. https://doi.org/10.1080/09546634.2020.1714538. Epub 2020 Jan 29. PMID: 31994944

- Garner KM, Zavala S, Pape KO, et al. A multicenter study analyzing the association of vitamin D deficiency and replacement with infectious outcomes in patients with burn injuries. Burns. 2021 Nov 6:S0305-4179(21)00307-7. https://doi.org/10.1016/j.burns.2021.10.020. Online ahead of print. PMID: 34903417

- Ge Y, Luo J, Li D, et al. Deficiency of vitamin D receptor in keratinocytes augments dermal fibrosis and inflammation in a mouse model of HOCl-induced scleroderma. Biochem Biophys Res Commun. 2022 Feb 5;591:1-6. https://doi.org/10.1016/j.bbrc.2021.12.085. Epub 2021 Dec 26. PMID: 34986435

- Hassan GFR, Sadoma MET, Elbatsh MM, et al. Treatment with oral vitamin D alone, topical minoxidil, or combination of both in patients with female pattern hair loss: A comparative clinical and dermoscopic study. J Cosmet Dermatol. 2022 Jan 10. https://doi.org/10.1111/jocd.14743. Online ahead of print. PMID: 35001510

- Huang YH, Yang TH, Huang PC, et al. Low Vitamin D Levels in Breast Milk May Be a Risk Factor for Atopic Dermatitis Flare-up During Infancy. Dermatitis. 2021 Nov-Dec 01;32(6):e124-e125. https://doi.org/10.1097/DER.0000000000000695. PMID: 33332866

- Mahmmod Z, Ismael DK. Vitamin D Deficiency in Patients With Vitiligo: A Cross-Sectional Study From Basrah, Iraq. Cureus. 2021 Dec 27;13(12):e20733. https://doi.org/10.7759/cureus.20733. eCollection 2021 Dec. PMID: 35111426

- Mamdouh M, Omar GA, Hafiz HSA, et al. Role of vitamin D in treatment of keloid. J Cosmet Dermatol. 2022 Jan;21(1):331-336. https://doi.org/10.1111/jocd.14070. Epub 2021 Mar 26. PMID: 33721390

- Manav V, Türk CB, Kara Polat A, et al. Evaluation of the serum magnesium and vitamin D levels and the risk of anxiety in primary hyperhidrosis. J Cosmet Dermatol. 2022 Jan;21(1):373-379. https://doi.org/10.1111/jocd.14075. Epub 2021 Apr 16. PMID: 33738914

- Papadimitriou DT, Bothou C, Dermitzaki E, et al. Treatment of alopecia totalis/universalis/focalis with vitamin D and analogs: Three case reports and a literature review. World J Clin Pediatr. 2021 Nov 9;10(6):192-199. https://doi.org/10.5409/wjcp.v10.i6.192. eCollection 2021 Nov 9. PMID: 34868895

- Prtina A, Rašeta Simović N, Milivojac T, et al. The Effect of Three-Month Vitamin D Supplementation on the Levels of Homocysteine Metabolism Markers and Inflammatory Cytokines in Sera of Psoriatic Patients. Biomolecules. 2021 Dec 11;11(12):1865. https://doi.org/10.3390/biom11121865. PMID: 34944509

- Saini K, Mysore V. Role of vitamin D in hair loss: A short review. J Cosmet Dermatol. 2021 Nov;20(11):3407-3414. https://doi.org/10.1111/jocd.14421. Epub 2021 Sep 22. PMID: 34553483 Review.

- Singh A, Dorjay K, Sinha S, et al. The interplay of vitamin D and body mass index in acne patients vs. controls. J Cosmet Dermatol. 2021 Nov;20(11):3689-3694. https://doi.org/10.1111/jocd.14034. Epub 2021 Mar 9. PMID: 33655695

- Song J, Liu K, Chen W, et al. Circulating Vitamin D Levels and Risk of Vitiligo: Evidence From Meta-Analysis and Two-Sample Mendelian Randomization. Front Nutr. 2021 Dec 22;8:782270. https://doi.org/10.3389/fnut.2021.782270. eCollection 2021. PMID: 35004812

- Vandikas MS, Landin-Wilhelmsen K, Polesie S, et al. Impact of Etanercept on Vitamin D Status and Vitamin D-binding Protein in Bio-naive Patients with Psoriasis. Acta Derm Venereol. 2021 Nov 24;101(11):adv00604. https://doi.org/10.2340/actadv.v101.359. PMID: 34643740

- Varikasuvu SR, Aloori S, Varshney S, et al. Erratum on "Decreased circulatory levels of Vitamin D in Vitiligo: a meta-analysis". An Bras Dermatol. 2021 Nov-Dec;96(6):802. https://doi.org/10.1016/j.abd.2021.09.001. PMID: 34772479

- Wang M, Zhou Y, Yan Y. Vitamin D status and efficacy of vitamin D supplementation in acne patients: A systematic review and meta-analysis. J Cosmet Dermatol. 2021 Dec;20(12):3802-3807. https://doi.org/10.1111/jocd.14057. Epub 2021 Apr 15. PMID: 33690970 Review.

- Wierzbicka JM, Piotrowska A, Purzycka-Bohdan D, et al. The Effects of Vitamin D on the Expression of IL-33 and Its Receptor ST2 in Skin Cells; Potential Implication for Psoriasis. Int J Mol Sci. 2021 Nov 29;22(23):12907. https://doi.org/10.3390/ijms222312907. PMID: 34884710

- Zhang J, Zhu Q, Zhang S, et al. Double knockout of vitamin D receptor and its coactivator mediator complex subunit 1 unexpectedly enhances epidermal permeability barrier function in mice. Biochim Biophys Acta Mol Cell Res. 2021 Nov;1868(12):119131. https://doi.org/10.1016/j.bbamcr.2021.119131. Epub 2021 Aug 26. PMID: 34453978

- Zubair Z, Kantamaneni K, Jalla K, et al. Prevalence of Low Serum Vitamin D Levels in Patients Presenting With Androgenetic Alopecia: A Review. Cureus. 2021 Dec 15;13(12):e20431. https://doi.org/10.7759/cureus.20431. eCollection 2021 Dec. PMID: 35047268

ENDOCRINOLOGY

- Acharya R, Kopczynska M, Goodmaker C, et al. Vitamin D repletion in primary hyperparathyroid patients undergoing parathyroidectomy leads to reduced symptomatic hypocalcaemia and reduced length of stay: a retrospective cohort study. Ann R Coll Surg Engl. 2022 Jan;104(1):41-47. https://doi.org/10.1308/rcsann.2021.0078. Epub 2021 Nov 2. PMID: 34727512

- Akash C, Prabhu M, Maldar A, et al. Association of Telomere Length and Serum Vitamin D Levels with Type 2 Diabetes Mellitus and its Related Complications: A Possible Future Perspective. Genome Integr. 2021 Nov 18;12:2. https://doi.org/10.4103/genint.genint_3_21. eCollection 2021. PMID: 34976365

- Alkhedaide AQ, Mergani A, Aldhahrani AA, et al. Association of vitamin D receptor gene polymorphisms with type 2 diabetes mellitus in Taif population: a case-control study. Braz J Biol. 2021 Dec 20;84:e250739. https://doi.org/10.1590/1519-6984.250739. eCollection 2021. PMID: 34932627

- Alrefaie Z, Ali SS, Hamed EA. Elevated hippocampal mGlut2 receptors in rats with metabolic syndrome-induced-memory impairment, possible protection by vitamin D. Brain Res Bull. 2022 Mar;180:108-117. https://doi.org/10.1016/j.brainresbull.2022.01.002. Epub 2022 Jan 11. PMID: 35026347

- An HJ, Seo YG. Differences in Fat-Free Mass According to Serum Vitamin D Level and Calcium Intake: Korea National Health and Nutrition Examination Survey 2008-2011. J Clin Med. 2021 Nov 20;10(22):5428. https://doi.org/10.3390/jcm10225428. PMID: 34830710

- Appunni S, Rubens M, Ramamoorthy V, et al. Association between vitamin D deficiency and hypothyroidism: results from the National Health and Nutrition Examination Survey (NHANES) 2007-2012. BMC Endocr Disord. 2021 Nov 12;21(1):224. https://doi.org/10.1186/s12902-021-00897-1. PMID: 34772378

- Barham A, Mohammad B, Hasoun L, et al. The combination of omega-3 fatty acids with high doses of vitamin D3 elevate A1c levels: A randomized Clinical Trial in people with vitamin D deficiency. Int J Clin Pract. 2021 Nov;75(11):e14779. https://doi.org/10.1111/ijcp.14779. Epub 2021 Sep 12. PMID: 34482574 Clinical Trial.

- Bastos TSB, Braga TT, Davanso MR. Vitamin D and Omega-3 Polyunsaturated Fatty Acids in Type 1 Diabetes modulation. Endocr Metab Immune Disord Drug Targets. 2022 Jan 3. https://doi.org/10.2174/1871530322666220103114450. Online ahead of print. PMID: 34979894

- Best CM, Zelnick LR, Thummel KE, et al. Serum Vitamin D: Correlates of Baseline Concentration and Response to Supplementation in VITAL-DKD. J Clin Endocrinol Metab. 2022 Jan 18;107(2):525-537. https://doi.org/10.1210/clinem/dgab693. PMID: 34543425

- Bilginer MC, Aydin C, Polat B, et al. Assessment of calcium and vitamin D medications adherence in patients with hypoparathyroidism after thyroidectomy. Arch Osteoporos. 2022 Jan 24;17(1):22. https://doi.org/10.1007/s11657-022-01066-0. PMID: 35072832

- Bima A, Eldakhakhny B, Nuwaylati D, et al. The Interplay of Vitamin D Deficiency and Cellular Senescence in The Pathogenesis of Obesity-Related Co-Morbidities. Nutrients. 2021 Nov 17;13(11):4127. https://doi.org/10.3390/nu13114127. PMID: 34836382

- Boisen IM, Nielsen JE, Verlinden L, et al. Calcium transport in male reproduction is possibly influenced by vitamin D and CaSR. J Endocrinol. 2021 Nov 5;251(3):207-222. https://doi.org/10.1530/JOE-20-0321. PMID: 34612843

- Buchmann N, Eckstein N, Spira D, et al. Vitamin D insufficiency is associated with metabolic syndrome independent of insulin resistance and obesity in young adults - The Berlin Aging Study II. Diabetes Metab Res Rev. 2021 Nov;37(8):e3457. https://doi.org/10.1002/dmrr.3457. Epub 2021 Apr 30. PMID: 33886146

- Castillo-Otí JM, Galván-Manso AI, Callejas-Herrero MR, et al. Vitamin D Deficiency Is Significantly Associated with Retinopathy in Type 2 Diabetes Mellitus: A Case-Control Study. Nutrients. 2021 Dec 25;14(1):84. https://doi.org/10.3390/nu14010084. PMID: 35010958

- Chan YH, Schooling CM, Zhao JV, et al.

Mendelian randomization analysis of vitamin D in the secondary prevention of hypertensive-diabetic subjects: role of facilitating blood pressure control. Genes Nutr. 2022 Jan 29;17(1):1. https://doi.org/10.1186/s12263-022-00704-z. PMID: 35093020

- de Melo FTC, Felício KM, de Queiroz NNM, et al. High-dose Vitamin D Supplementation on Type 1 Diabetes Mellitus Patients: Is there an Improvement in Glycemic Control? Curr Diabetes Rev. 2022;18(1):e010521189964. https://doi.org/10.2174/1573399817666210106102643. PMID: 33413064
- Deng J, Guo S, Liu X, et al. The Interaction between Vitamin D and Diets on Serum Lipids in Chinese Han Adolescents. Clin Lab. 2022 Jan 1;68(1). https://doi.org/10.7754/Clin.Lab.2021.201202. PMID: 35023675
- Dixit V, Rl T, Dhanwal DK. Lack of secondary hyperparathyroidism in sub-group of vitamin D deficient postmenopausal women: Is VDR receptor gene polymorphism behind this mystery? Diabetes Metab Syndr. 2021 Dec 28;16(1):102381. https://doi.org/10.1016/j.dsx.2021.102381. Online ahead of print. PMID: 34995987
- Ebaditabar M, Babaei N, Davarzani S, et al. Lack of a relationship between vitamin D status and resting metabolic rate in Iranian adults. Am J Hum Biol. 2021 Nov;33(6):e23543. https://doi.org/10.1002/ajhb.23543. Epub 2020 Dec 4. PMID: 33274831
- Gariballa S, Shah I, Yasin J, et al. Vitamin D [25(OH)D] metabolites and epimers in obese subject: Interaction and correlations with adverse metabolic health risk factors. J Steroid Biochem Mol Biol. 2022 Jan;215:106023. https://doi.org/10.1016/j.jsbmb.2021.106023. Epub 2021 Nov 10. PMID: 34774725 Clinical Trial.
- Ghodsi M, Keshtkar AA, Razi F, et al. Association of vitamin D receptor gene polymorphism with the occurrence of low bone density, osteopenia, and osteoporosis in patients with type 2 diabetes. J Diabetes Metab Disord. 2021 Aug 23;20(2):1375-1383. https://doi.org/10.1007/s40200-021-00871-7. eCollection 2021 Dec. PMID: 34900789
- Giha HA, AlDehaini DMB, Joatar FE, et al. Hormonal and metabolic profiles of obese and nonobese type 2 diabetes patients: implications of plasma insulin, ghrelin, and vitamin D levels. Cardiovasc Endocrinol Metab. 2022 Jan 21;11(1):e0256. https://doi.org/10.1097/XCE.0000000000000256. eCollection 2022 Mar. PMID: 35098041
- Girard E, Nacher M, Bukasa-Kakamba J, et al. Vitamin D Deficiency in Patients with Diabetes in French Guiana: Epidemiology and Relation with Microvascular and Macrovascular Complications. Nutrients. 2021 Nov 28;13(12):4302. https://doi.org/10.3390/nu13124302. PMID: 34959854
- Holt R, Petersen JH, Dinsdale E, et al. Vitamin D Supplementation Improves Fasting Insulin Levels and HDL Cholesterol in Infertile Men. J Clin Endocrinol Metab. 2022 Jan 1;107(1):98-108. https://doi.org/10.1210/clinem/dgab667. PMID: 34508607
- Huang W, Ma X, Liang H, et al. Dietary Magnesium Intake Affects the Association Between Serum Vitamin D and Type 2 Diabetes: A Cross-Sectional Study. Front Nutr. 2021 Nov 25;8:763076. https://doi.org/10.3389/fnut.2021.763076. eCollection 2021. PMID: 34901114
- Hussein HM, Elyamany MF, Rashed LA, et al. Vitamin D mitigates diabetes-associated metabolic and cognitive dysfunction by modulating gut microbiota and colonic cannabinoid receptor 1. Eur J Pharm Sci. 2022 Mar 1;170:106105. https://doi.org/10.1016/j.ejps.2021.106105. Epub 2021 Dec 20. PMID: 34942358
- Hu Y, Li S, Wang J, et al. Threshold for Relationship between Vitamin D and Parathyroid Hormone in Chinese Women of Childbearing Age. Int J Environ Res Public Health. 2021 Dec 10;18(24):13060. https://doi.org/10.3390/ijerph182413060. PMID: 34948669
- Jiang H, Chen X, Qian X, et al. Effects of vitamin D treatment on thyroid function and autoimmunity markers in patients with Hashimoto's thyroiditis-A meta-analysis of randomized controlled trials. J Clin Pharm Ther. 2022 Jan 3. https://doi.org/10.1111/jcpt.13605. Online ahead of print. PMID: 34981556
- Lai X, Liu X, Cai X, et al. Vitamin D supplementation induces CatG-mediated CD4(+) T cell inactivation and restores pancreatic beta-cell function in mice with type 1 diabetes. Am J Physiol Endocrinol Metab. 2022 Jan 1;322(1):E74-E84. https://doi.org/10.1152/ajpendo.00066.2021. Epub 2021 Nov 15. PMID: 34779254
- Ling Y, Xu F, Xia X, et al. Vitamin D receptor regulates proliferation and differentiation of thyroid carcinoma via the E-cadherin-beta-catenin complex. J Mol Endocrinol. 2022 Jan 1:JME-21-0167.R1. https://doi.org/10.1530/JME-21-0167. Online ahead of print. PMID: 35099410
- Liu S. The role of vitamin D receptor gene polymorphisms in gestational diabetes mellitus susceptibility: a meta-analysis. Diabetol Metab Syndr. 2021 Dec 13;13(1):144. https://doi.org/10.1186/s13098-021-00764-y. PMID: 34903261
- Liu W, Wu Z, Zhu D, et al. Vitamin D and Lipid Profiles in Postmenopausal Women: A Meta-Analysis and Systematic Review of Randomized Controlled Trials. Front Mol Biosci. 2021 Dec 17;8:799934. https://doi.org/10.3389/fmolb.2021.799934. eCollection 2021. PMID: 34977158
- Li Y, Tong CH, Rowland CM, et al. Association of changes in lipid levels with changes in vitamin D levels in a real-world setting. Sci Rep. 2021 Nov 2;11(1):21536. https://doi.org/10.1038/s41598-021-01064-1. PMID: 34728785
- Maganeva IS, Pigarova EA, Shulpekova NV, et al. [Vitamin D metabolite and calcium phosphorus metabolism in in patients with primary hyperparathyroidism on the background of bolus therapy with colecalciferol]. Probl Endokrinol (Mosk). 2021 Dec 6;67(6):68-79. https://doi.org/10.14341/probl12851. PMID: 35018763 Russian.
- Maulood KA. Estimation of vitamin D receptor gene polymorphism in Type 2 Diabetes Mellitus patients in Erbil city. Cell Mol Biol (Noisy-le-grand). 2021 Nov 25;67(3):76-84. https://doi.org/10.14715/cmb/2021.67.3.10. PMID: 34933730
- Mehta S, Nain P, Agrawal BK, et al. Effectiveness of Empagliflozin With Vitamin D Supplementation in Peripheral Neuropathy in Type 2 Diabetic Patients. Cureus. 2021 Dec 6;13(12):e20208. https://doi.org/10.7759/cureus.20208. eCollection 2021 Dec. PMID: 35004028
- Mendes AKB, Sulis PM, Cavalari FC, et al. 1alpha,25-(OH)(2) vitamin D(3) prevents insulin resistance and regulates coordinated exocytosis and insulin secretion. J Nutr Bio-

chem. 2022 Jan;99:108864. https://doi.org/10.1016/j.jnutbio.2021.108864. Epub 2021 Oct 1. PMID: 34606907

- Najjar L, Sutherland J, Zhou A, et al. Vitamin D and Type 1 Diabetes Risk: A Systematic Review and Meta-Analysis of Genetic Evidence. Nutrients. 2021 Nov 26;13(12):4260. https://doi.org/10.3390/nu13124260. PMID: 34959812

- Nikooyeh B, Shariatzadeh N, Rismanchi M, et al. Daily intake of yogurt drink fortified either with vitamin D alone or in combination with added calcium causes a thyroid-independent increase of resting metabolic rate in adults with type 2 diabetes: a randomized, double-blind, clinical trial. Appl Physiol Nutr Metab. 2021 Nov;46(11):1363-1369. https://doi.org/10.1139/apnm-2021-0248. Epub 2021 Jun 2. PMID: 34077684 Clinical Trial.

- Oliveira MA, Faerstein E, Koury JC, et al. Vitamin D is directly associated with favorable glycemic, lipid, and inflammatory profiles in individuals with at least one component of metabolic syndrome irrespective of total adiposity: Pro-Saude Study, Brazil. Nutr Res. 2021 Dec;96:1-8. https://doi.org/10.1016/j.nutres.2021.10.002. Epub 2021 Nov 25. PMID: 34890855

- Peng Y, Wu M, Alvarez JA, et al. Vitamin D Status and Risk of Cystic Fibrosis-Related Diabetes: A Retrospective Single Center Cohort Study. Nutrients. 2021 Nov 12;13(11):4048. https://doi.org/10.3390/nu13114048. PMID: 34836301

- Povaliaeva A, Bogdanov V, Pigarova E, et al. Assessment of Vitamin D Metabolism in Patients with Cushing's Disease in Response to 150,000 IU Cholecalciferol Treatment. Nutrients. 2021 Nov 30;13(12):4329. https://doi.org/10.3390/nu13124329. PMID: 34959880

- Rafiq S, Jeppesen PB. Vitamin D Deficiency Is Inversely Associated with Homeostatic Model Assessment of Insulin Resistance. Nutrients. 2021 Dec 3;13(12):4358. https://doi.org/10.3390/nu13124358. PMID: 34959910

- Rasouli N, Brodsky IG, Chatterjee R, et al. Effects of Vitamin D Supplementation on Insulin Sensitivity and Secretion in Prediabetes. J Clin Endocrinol Metab. 2022 Jan 1;107(1):230-240. https://doi.org/10.1210/clinem/dgab649. PMID: 34473295

- Saleem N, Rizvi NB, Elahi S. Prevalence of Vitamin D Deficiency and Its Association with Insulin Resistance in Obese Women with Normal Fasting Glucose. Biomed Res Int. 2021 Dec 14;2021:2259711. https://doi.org/10.1155/2021/2259711. eCollection 2021. PMID: 34950730

- Salem TM, Abdelmonem E, Fayad A. Hashimoto's thyroiditis, iron, and vitamin D deficiency among Egyptian female patients: associations and possible causalities. Hormones (Athens). 2021 Dec;20(4):833-836. https://doi.org/10.1007/s42000-021-00297-z. Epub 2021 May 26. PMID: 34037970

- Schlingmann KP. Vitamin D-dependent Hypercalcemia. Endocrinol Metab Clin North Am. 2021 Dec;50(4):729-742. https://doi.org/10.1016/j.ecl.2021.08.005. PMID: 34774244 Review.

- Szymczak-Pajor I, Miazek K, Selmi A, et al. The Action of Vitamin D in Adipose Tissue: Is There the Link between Vitamin D Deficiency and Adipose Tissue-Related Metabolic Disorders? Int J Mol Sci. 2022 Jan 16;23(2):956. https://doi.org/10.3390/ijms23020956. PMID: 35055140

- Tecilazich F, Formenti AM, Giustina A. Role of vitamin D in diabetic retinopathy: Pathophysiological and clinical aspects. Rev Endocr Metab Disord. 2021 Dec;22(4):715-727. https://doi.org/10.1007/s11154-020-09575-4. PMID: 33026598

- Valle MS, Russo C, Malaguarnera L. Protective role of vitamin D against oxidative stress in diabetic retinopathy. Diabetes Metab Res Rev. 2021 Nov;37(8):e3447. https://doi.org/10.1002/dmrr.3447. Epub 2021 Mar 24. PMID: 33760363 Review.

- Wierzbicka A, Oczkowicz M. Sex differences in vitamin D metabolism, serum levels and action. Br J Nutr. 2022 Jan 19:1-46. https://doi.org/10.1017/S0007114522000149. Online ahead of print. PMID: 35042577

- Xiang M, Sun X, Wei J, et al. Combined effects of vitamin D supplementation and endurance exercise training on insulin resistance in newly diagnosed type 2 diabetes mellitus patients with vitamin D deficiency: study protocol for a randomized controlled trial. Trials. 2021 Dec 6;22(1):888. https://doi.org/10.1186/s13063-021-05861-x. PMID: 34872610

- Xu H, Han G, Wang L, et al. 25-hydroxyvitamin D levels are inversely related to metabolic syndrome risk profile in northern Chinese subjects without vitamin D supplementation. Diabetol Metab Syndr. 2022 Jan 29;14(1):23. https://doi.org/10.1186/s13098-022-00793-1. PMID: 35093150

- Yang C, Liu X, Li J, et al. Association of Serum Vitamin D and Estradiol Levels with Metabolic Syndrome in Rural Women of Northwest China: A Cross-Sectional Study. Metab Syndr Relat Disord. 2022 Jan 17. https://doi.org/10.1089/met.2021.0120. Online ahead of print. PMID: 35041548

- Yin T, Xu F, Shi S, et al. Correction to: Vitamin D mediates the association between acrylamide hemoglobin biomarkers and obesity. Environ Sci Pollut Res Int. 2021 Nov 8. https://doi.org/10.1007/s11356-021-17332-6. Online ahead of print. PMID: 34748183

- Yu S, Feng Y, Qu C, et al. Vitamin D receptor methylation attenuates the association between physical activity and type 2 diabetes mellitus: A case-control study. J Diabetes. 2021 Nov 8. https://doi.org/10.1111/1753-0407.13239. Online ahead of print. PMID: 34751501

- Yu W, Fu Y, Feng L, et al. [Plasma proteomic analysis of diabetes improvement by vitamin D supplementation]. Wei Sheng Yan Jiu. 2021 Nov;50(6):962-966. https://doi.org/10.19813/j.cnki.weishengyanjiu.2021.06.015. PMID: 34949324 Chinese.

- Zhang J, Chen Y, Li H, et al. Effects of vitamin D on thyroid autoimmunity markers in Hashimoto's thyroiditis: systematic review and meta-analysis. J Int Med Res. 2021 Dec;49(12):3000605211060675. https://doi.org/10.1177/03000605211060675. PMID: 34871506

- Zhang Y, Xue Y, Zhang D, et al. Effect of Vitamin D Supplementation on Glycemic Control in Prediabetes: A Meta-Analysis. Nutrients. 2021 Dec 14;13(12):4464. https://doi.org/10.3390/nu13124464. PMID: 34960022

- Zhao Y, Mei G, Zhou F, et al. Vitamin D decreases pancreatic iron overload in type 2 diabetes through the NF-kappaB-DMT1 pathway. J Nutr Biochem. 2022 Jan;99:108870. https://doi.org/10.1016/j.jnutbio.2021.108870. Epub 2021 Sep 24. PMID: 34563663

- Zhu T, Zhao J, Zhuo S, et al. High Fat Diet and High Cholesterol Diet Reduce Hepatic Vitamin D-25-Hydroxylase Expression and Serum 25-Hydroxyvitamin D(3) Level through Elevating Circulating Cholesterol, Glucose, and Insulin Levels. Mol Nutr Food Res. 2021 Nov;65(21):e2100220. https://doi.org/10.1002/mnfr.202100220. Epub 2021 Sep 4. PMID: 34448353

- Zou Y, Guo B, Yu S, et al. Effect of vitamin D supplementation on glycose homeostasis and islet function in vitamin D deficient or insufficient diabetes and prediabetes: a systematic review and meta-analysis. J Clin Biochem Nutr. 2021 Nov;69(3):229-237. https://doi.org/10.3164/jcbn.20-165. Epub 2021 May 7. PMID: 34857984

- Šošić-Jurjević B, Trifunović S, Živanović J, et al. Vitamin D(3) Treatment Alters Thyroid Functional Morphology in Orchidectomized Rat Model of Osteoporosis. Int J Mol Sci. 2022 Jan 12;23(2):791. https://doi.org/10.3390/ijms23020791. PMID: 35054977

EPIDEMIOLOGY

- [No authors listed] Correction: Association of vitamin D with incident glaucoma: findings from the Women's Health Initiative. J Investig Med. 2021 Dec;69(8):1487. https://doi.org/10.1136/jim-2020-001645corr1. PMID: 34824141

- Amaya-Montoya M, Duarte-Montero D, Nieves-Barreto LD, et al. 100 YEARS OF VITAMIN D: Dietary intake and main food sources of vitamin D and calcium in Colombian urban adults. Endocr Connect. 2021 Dec 9;10(12):1584-1593. https://doi.org/10.1530/EC-21-0341. PMID: 34766920

- Bater J, Bromage S, Jambal T, et al. Prevalence and Determinants of Vitamin D Deficiency in 9595 Mongolian Schoolchildren: A Cross-Sectional Study. Nutrients. 2021 Nov 21;13(11):4175. https://doi.org/10.3390/nu13114175. PMID: 34836430

- Brogniez C, Doré JF, Auriol F, et al. Erythemal and vitamin D weighted solar UV dose-rates and doses estimated from measurements in mainland France and on Reunion Island. J Photochem Photobiol B. 2021 Dec;225:112330. https://doi.org/10.1016/j.jphotobiol.2021.112330. Epub 2021 Oct 6. PMID: 34678614

- Cashman KD. Global differences in vitamin D status and dietary intake: a review of the data. Endocr Connect. 2022 Jan 11;11(1):e210282. https://doi.org/10.1530/EC-21-0282. PMID: 34860171

- Chakrabarty S. Prevalence and Covariates of Vitamin D Deficiencies (VDD) among Adolescents in India. Indian J Pediatr. 2021 Nov 27. https://doi.org/10.1007/s12098-021-04007-w. Online ahead of print. PMID: 34837641

- Chang CJ, Barr DB, Zhang Q, et al. Associations of single and multiple per- and polyfluoroalkyl substance (PFAS) exposure with vitamin D biomarkers in African American women during pregnancy. Environ Res. 2021 Nov;202:111713. https://doi.org/10.1016/j.envres.2021.111713. Epub 2021 Jul 18. PMID: 34284018

- Chen KW, Chen CW, Yuan KC, et al. Prevalence of Vitamin D Deficiency and Associated Factors in Critically Ill Patients: A Multicenter Observational Study. Front Nutr. 2021 Dec 13;8:768804. https://doi.org/10.3389/fnut.2021.768804. eCollection 2021. PMID: 34966771

- Datta P, Philipsen PA, Idorn LW, et al. Low vitamin D in dark-skinned immigrants is mainly due to clothing habits and low UVR exposure: a Danish observational study. Photochem Photobiol Sci. 2021 Dec;20(12):1573-1584. https://doi.org/10.1007/s43630-021-00115-w. Epub 2021 Oct 31. PMID: 34718967

- Gariballa S, Yasin J, Abluwi G, et al. Vitamin D deficiency associations with metabolic, bone turnover and adverse general health markers in community free living adults. BMC Endocr Disord. 2022 Jan 6;22(1):17. https://doi.org/10.1186/s12902-021-00926-z. PMID: 34991572

- Godala M, Sewerynek E, Gaszyńska E. Vitamin D status in Polish women with endocrine and osteoporotic disorders in relation to diet, supplement use and exposure to ultraviolet radiation. Adv Clin Exp Med. 2022 Jan;31(1):25-32. https://doi.org/10.17219/acem/141604. PMID: 34637199

- Hribar M, Benedik E, Gregorič M, et al. A Systematic Review of Vitamin D Status and Dietary Intake in Various Slovenian Populations. Zdr Varst. 2021 Dec 27;61(1):55-72. https://doi.org/10.2478/sjph-2022-0009. eCollection 2022 Mar. PMID: 35111267

- Ikonen H, Lumme J, Seppälä J, et al. The determinants and longitudinal changes in vitamin D status in middle-age: a Northern Finland Birth Cohort 1966 study. Eur J Nutr. 2021 Dec;60(8):4541-4553. https://doi.org/10.1007/s00394-021-02606-z. Epub 2021 Jun 17. PMID: 34137914

- Jiang Z, Pu R, Li N, et al. High prevalence of vitamin D deficiency in Asia: A systematic review and meta-analysis. Crit Rev Food Sci Nutr. 2021 Nov 16:1-10. https://doi.org/10.1080/10408398.2021.1990850. Online ahead of print. PMID: 34783278

- Kabataş N, Doğan AŞ, Yılmaz M, et al. Association between age-related macular degeneration and 25(OH) vitamin D levels in the Turkish population. Arq Bras Oftalmol. 2022 Jan-Feb;85(1):7-12. https://doi.org/10.5935/0004-2749.20220002. PMID: 34586223

- Kim YA, Yoon JW, Lee Y, et al. Unveiling Genetic Variants Underlying Vitamin D Deficiency in Multiple Korean Cohorts by a Genome-Wide Association Study. Endocrinol Metab (Seoul). 2021 Dec;36(6):1189-1200. https://doi.org/10.3803/EnM.2021.1241. Epub 2021 Dec 2. PMID: 34852423

- Kulsoom U, Khan A, Saghir T, et al. Vitamin D receptor gene polymorphism TaqI (rs731236) and its association with the susceptibility to coronary artery disease among Pakistani population. J Gene Med. 2021 Dec;23(12):e3386. https://doi.org/10.1002/jgm.3386. Epub 2021 Aug 31. PMID: 34365691

- Lovell P, Bullen K. Vitamin D levels in hospice in-patients. BMJ Support Palliat Care. 2021 Nov 15:bmjspcare-2021-003113. https://doi.org/10.1136/bmjspcare-2021-003113. Online ahead of print. PMID: 34782345

- Madi M, Pavlic V, Mongith Alammar S, et al. The association between vitamin D level and periodontal disease in Saudi population, a preliminary study. Saudi Dent J. 2021 Nov;33(7):595-600. https://doi.org/10.1016/j.sdentj.2020.08.002. Epub 2020 Aug 12. PMID: 34803306

- Maryam S, Saba S, Haider W, et al. Community-based social and demographic assessment of knowledge, attitudes, practices and medical conditions related to vitamin D deficiency in Gilgit Baltistan, Pakistan. J Biosoc Sci. 2021 Nov 2:1-25. https://doi.org/10.1017/S002193202100050X.

Online ahead of print. PMID: 34725003

- Marzban M, Kalantarhormozi M, Mahmudpour M, et al. Prevalence of vitamin D deficiency and its associated risk factors among rural population of the northern part of the Persian Gulf. BMC Endocr Disord. 2021 Nov 3;21(1):219. https://doi.org/10.1186/s12902-021-00877-5. PMID: 34732181
- Mekonnen W, Feleke Y, Asnake W, et al. Barriers in adult vitamin D service provision by health care workers: a qualitative study in three ecologies of Ethiopia. BMC Nutr. 2021 Dec 23;7(1):87. https://doi.org/10.1186/s40795-021-00492-6. PMID: 34937566
- Metwally ASM, Yakout SM, Khattak MNK, et al. Vitamin D Status and Its Association with Multiple Intelligence among Arab Adolescents. Int J Environ Res Public Health. 2021 Dec 10;18(24):13036. https://doi.org/10.3390/ijerph182413036. PMID: 34948650
- Mortensen C, Tetens I, Kristensen M, et al. Adherence and barriers to the vitamin D and calcium supplement recommendation at Danish nursing homes: a cross-sectional study. BMC Geriatr. 2022 Jan 6;22(1):27. https://doi.org/10.1186/s12877-021-02719-4. PMID: 34991498
- Oskarsson V, Eliasson M, Salomaa V, et al. Influence of geographical latitude on vitamin D status: cross-sectional results from the BiomarCaRE consortium. Br J Nutr. 2021 Dec 22:1-11. https://doi.org/10.1017/S0007114521005080. Online ahead of print. PMID: 34933700
- Pang Y, Kim O, Choi JA, et al. Vitamin D deficiency and associated factors in south Korean childbearing women: a cross-sectional study. BMC Nurs. 2021 Nov 1;20(1):218. https://doi.org/10.1186/s12912-021-00737-6. PMID: 34724924
- Rodopaios NE, Petridou A, Mougios V, et al. Vitamin D status, vitamin D intake, and sunlight exposure in adults adhering or not to periodic religious fasting for decades. Int J Food Sci Nutr. 2021 Nov;72(7):989-996. https://doi.org/10.1080/09637486.2021.1887821. Epub 2021 Feb 17. PMID: 33595398
- Siddiqee MH, Bhattacharjee B, Siddiqi UR, et al. High prevalence of vitamin D insufficiency among South Asian pregnant women: a systematic review and meta-analysis. Br J Nutr. 2021 Nov 2:1-12. https://doi.org/10.1017/S0007114521004360. Online ahead of print. PMID: 34725002
- Vearing RM, Hart KH, Charlton K, et al. Vitamin D Status of the British African-Caribbean Residents: Analysis of the UK Biobank Cohort. Nutrients. 2021 Nov 16;13(11):4104. https://doi.org/10.3390/nu13114104. PMID: 34836358
- Warensjö Lemming E, Petrelius Sipinen J, Nyberg G, et al. Vitamin D status and associations with diet, objectively measured physical activity patterns and background characteristics among adolescents in a representative national cross-sectional survey. Public Health Nutr. 2022 Jan 24:1-28. https://doi.org/10.1017/S1368980022000222. Online ahead of print. PMID: 35067271
- Xu XQ, Zhang J, Zhao WH. [Exploration of applying machine learning in establishment of vitamin D classifiers among Chinese elderly]. Zhonghua Yu Fang Yi Xue Za Zhi. 2021 Dec 6;55(12):1475-1481. https://doi.org/10.3760/cma.j.cn112150-20210425-00412. PMID: 34963246 Chinese.
- Yuan L, Ni J. The association between tobacco smoke exposure and vitamin D levels among US general population, 2001-2014: temporal variation and inequalities in population susceptibility. Environ Sci Pollut Res Int. 2022 Jan 12:1-15. https://doi.org/10.1007/s11356-021-17905-5. Online ahead of print. PMID: 35020139

GASTROENTEROLOGY

- [No authors listed] Early Evidence Indicates Vitamin D Improves Symptoms of Irritable Bowel Syndrome: Nursing Implications and Future Research Opportunities. Gastroenterol Nurs. 2021 Nov-Dec 01;44(6):E106. https://doi.org/10.1097/SGA.0000000000000648. PMID: 34860192
- Abolghasemi A, Manca C, Iannotti FA, et al. Assessment of the Effects of Dietary Vitamin D Levels on Olanzapine-Induced Metabolic Side Effects: Focus on the Endocannabinoidome-Gut Microbiome Axis. Int J Mol Sci. 2021 Nov 16;22(22):12361. https://doi.org/10.3390/ijms222212361. PMID: 34830242
- Bamias G, Rivera-Nieves J. Vitamin D Levels May Predict Response to Vedolizumab. J Crohns Colitis. 2021 Dec 18;15(12):1978-1979. https://doi.org/10.1093/ecco-jcc/jjab105. PMID: 34185075
- Bennouar S, Cherif AB, Kessira A, et al. Association and interaction between vitamin D level and metabolic syndrome for non-alcoholic fatty liver disease. J Diabetes Metab Disord. 2021 Jul 21;20(2):1309-1317. https://doi.org/10.1007/s40200-021-00857-5. eCollection 2021 Dec. PMID: 34900782
- Chen Y, Hou J, Xiao Z, et al. The Role of Vitamin D in Gastrointestinal Diseases: Inflammation, Gastric Cancer, and Colorectal Cancer. Curr Med Chem. 2021 Nov 11. https://doi.org/10.2174/0929867328666211111163304. Online ahead of print. PMID: 34766885
- Christakos S. Vitamin D: A Critical Regulator of Intestinal Physiology. JBMR Plus. 2021 Oct 6;5(12):e10554. https://doi.org/10.1002/jbm4.10554. eCollection 2021 Dec. PMID: 34950825
- Cusato J, Bertani L, Antonucci M, et al. Vitamin D-Related Genetics as Predictive Biomarker of Clinical Remission in Adalimumab-Treated Patients Affected by Crohn's Disease: A Pilot Study. Pharmaceuticals (Basel). 2021 Nov 27;14(12):1230. https://doi.org/10.3390/ph14121230. PMID: 34959633
- Goswami S, Flores J, Balasubramanian I, et al. 1,25-Dihydroxyvitamin D(3) and dietary vitamin D reduce inflammation in mice lacking intestinal epithelial cell Rab11a. J Cell Physiol. 2021 Dec;236(12):8148-8159. https://doi.org/10.1002/jcp.30486. Epub 2021 Jun 30. PMID: 34192357
- Gubatan J, Rubin SJS, Bai L, et al. Vitamin D Is Associated with alpha4beta7+ Immunophenotypes and Predicts Vedolizumab Therapy Failure in Patients with Inflammatory Bowel Disease. J Crohns Colitis. 2021 Dec 18;15(12):1980-1990. https://doi.org/10.1093/ecco-jcc/jjab114. PMID: 34180967
- Guo XF, Wang C, Yang T, et al. The effects of fish oil plus vitamin D(3) intervention on non-alcoholic fatty liver disease: a randomized controlled trial. Eur J Nutr. 2022 Jan 24. https://doi.org/10.1007/s00394-021-02772-0. Online ahead of print. PMID: 35067753
- Hong J, Shin WK, Lee JW, et al. Associations of Serum Vitamin D Level with Sar-

copenia, Non-Alcoholic Fatty Liver Disease (NAFLD), and Sarcopenia in NAFLD Among People Aged 50 Years and Older: The Korea National Health and Nutrition Examination Survey IV-V. Metab Syndr Relat Disord. 2022 Jan 31. https://doi.org/10.1089/met.2021.0106. Online ahead of print. PMID: 35100057

- Kosinsky RL, Zerche M, Kutschat AP, et al. RNF20 and RNF40 regulate vitamin D receptor-dependent signaling in inflammatory bowel disease. Cell Death Differ. 2021 Nov;28(11):3161-3175. https://doi.org/10.1038/s41418-021-00808-w. Epub 2021 Jun 4. PMID: 34088983

- Matthews SW, Heitkemper MM, Kamp K. Early Evidence Indicates Vitamin D Improves Symptoms of Irritable Bowel Syndrome: Nursing Implications and Future Research Opportunities. Gastroenterol Nurs. 2021 Nov-Dec 01;44(6):426-436. https://doi.org/10.1097/SGA.0000000000000634. PMID: 34690298

- Mohamed AA, Al-Karmalawy AA, El-Kholy AA, et al. Effect of Vitamin D supplementation in patients with liver cirrhosis having spontaneous bacterial peritonitis: a randomized controlled study. Eur Rev Med Pharmacol Sci. 2021 Nov;25(22):6908-6919. https://doi.org/10.26355/eurrev_202111_27239. PMID: 34859852

- Pagnini C, Di Paolo MC, Graziani MG, et al. Probiotics and Vitamin D/Vitamin D Receptor Pathway Interaction: Potential Therapeutic Implications in Inflammatory Bowel Disease. Front Pharmacol. 2021 Nov 24;12:747856. https://doi.org/10.3389/fphar.2021.747856. eCollection 2021. PMID: 34899302

- Refaat B, Abdelghany AH, Ahmad J, et al. Vitamin D(3) enhances the effects of omega-3 oils against metabolic dysfunction-associated fatty liver disease in rat. Biofactors. 2021 Nov 12. https://doi.org/10.1002/biof.1804. Online ahead of print. PMID: 34767670

- Rezaei S, Tabrizi R, Nowrouzi-Sohrabi P, et al. The Effects of Vitamin D Supplementation on Anthropometric and Biochemical Indices in Patients With Non-alcoholic Fatty Liver Disease: A Systematic Review and Meta-analysis. Front Pharmacol. 2021 Nov 3;12:732496. https://doi.org/10.3389/fphar.2021.732496. eCollection 2021. PMID: 34803681

- Shao R, Liu J, Lan Y, et al. Vitamin D impacts on the intestinal health, immune status, and metabolism in turbot (Scophthalmus maximus L.). Br J Nutr. 2022 Jan 21:1-36. https://doi.org/10.1017/S0007114522000125. Online ahead of print. PMID: 35057874

- Shieh A, Lee SM, Lagishetty V, et al. Pilot Trial of Vitamin D3 and Calcifediol in Healthy Vitamin D Deficient Adults: Does It Change the Fecal Microbiome? J Clin Endocrinol Metab. 2021 Nov 19;106(12):3464-3476. https://doi.org/10.1210/clinem/dgab573. PMID: 34343292 Clinical Trial.

- Stallhofer J, Veith L, Diegelmann J, et al. Iron Deficiency in Inflammatory Bowel Disease Is Associated With Low Levels of Vitamin D Modulating Serum Hepcidin and Intestinal Ceruloplasmin Expression. Clin Transl Gastroenterol. 2022 Jan 13;13(1):e00450. https://doi.org/10.14309/ctg.0000000000000450. Online ahead of print. PMID: 35029158

- Vernia F, Valvano M, Longo S, et al. Vitamin D in Inflammatory Bowel Diseases. Mechanisms of Action and Therapeutic Implications. Nutrients. 2022 Jan 9;14(2):269. https://doi.org/10.3390/nu14020269. PMID: 35057450

- Wang J, Wang X, Ma X, et al. Therapeutic effect of Patrinia villosa on TNBS-induced ulcerative colitis via metabolism, vitamin D receptor and NF-kappaB signaling pathways. J Ethnopharmacol. 2022 Jan 13;288:114989. https://doi.org/10.1016/j.jep.2022.114989. Online ahead of print. PMID: 35032589

- Wang M, Wang M, Zhang R, et al. Influences of vitamin D levels and vitamin D binding protein polymorphisms on non-alcoholic fatty liver disease risk in a Chinese population. Ann Nutr Metab. 2022 Jan 31. https://doi.org/10.1159/000522193. Online ahead of print. PMID: 35100585

- Wei X, Li X, Du J, et al. Vitamin D Deficiency Exacerbates Colonic Inflammation Due to Activation of the Local Renin-Angiotensin System in the Colon. Dig Dis Sci. 2021 Nov;66(11):3813-3821. https://doi.org/10.1007/s10620-020-06713-5. Epub 2021 Jan 12. PMID: 33433800

- Wellington VNA, Sundaram VL, Singh S, et al. Dietary Supplementation with Vitamin D, Fish Oil or Resveratrol Modulates the Gut Microbiome in Inflammatory Bowel Disease. Int J Mol Sci. 2021 Dec 24;23(1):206. https://doi.org/10.3390/ijms23010206. PMID: 35008631

- Yang X, Zhu Q, Zhang L, et al. Causal relationship between gut microbiota and serum vitamin D: evidence from genetic correlation and Mendelian randomization study. Eur J Clin Nutr. 2022 Jan 19. https://doi.org/10.1038/s41430-021-01065-3. Online ahead of print. PMID: 35046567

- Zepeda M, Pérez J, Doepking C. Vitamin D supplementation in inflammatory bowel disease: a narrative review. Medwave. 2022 Jan 24;22(1):e8536. https://doi.org/10.5867/medwave.2022.01.002525. PMID: 35100245 Review. English, Spanish.

- Zhang Z, Moon R, Thorne JL, et al. NAFLD and vitamin D: Evidence for intersection of microRNA-regulated pathways. Nutr Res Rev. 2021 Dec 9:1-20. https://doi.org/10.1017/S095442242100038X. Online ahead of print. PMID: 35109946 Review.

HEMATOLOGY

- Gleba JJ, Kłopotowska D, Banach J, Polymorphism of VDR Gene and the Sensitivity of Human Leukemia and Lymphoma Cells to Active Forms of Vitamin D. Cancers (Basel). 2022 Jan 13;14(2):387. https://doi.org/10.3390/cancers14020387. PMID: 35053549

- Heerfordt IM, Lerche CM, Philipsen PA, et al. The effect of vitamin D recommendations on serum 25-hydroxyvitamin D level in patients with erythropoietic protoporphyria. Nutrition. 2022 Jan;93:111477. https://doi.org/10.1016/j.nut.2021.111477. Epub 2021 Sep 5. PMID: 34763310

- Macedo R, Pasin C, Ganetsky A, et al. Vitamin D deficiency after allogeneic hematopoietic cell transplantation promotes T-cell activation and is inversely associated with an EZH2-ID3 signature. Transplant Cell Ther. 2022 Jan;28(1):18.e1-18.e10. https://doi.org/10.1016/j.jtct.2021.09.017. Epub 2021 Sep 28. PMID: 34597852

- Oortgiesen BE, Kroes JA, Scholtens P, et al. High prevalence of peripheral neuropathy in multiple myeloma patients and the impact of vitamin D levels, a cross-sectional study. Support Care Cancer. 2022 Jan;30(1):271-278. https://doi.org/10.1007/s00520-021-06414-3.

Epub 2021 Jul 17. PMID: 34273034

- Postorino M, Massoud R, Guarnera L, et al. Vitamin D and non-Hodgkin lymphomas, trends from an Italian monocentric study. Panminerva Med. 2021 Dec;63(4):547-549. https://doi.org/10.23736/S0031-0808.21.04501-8. PMID: 34915692
- Seong JM, Park CE, Gi MY, et al. Gender difference in the relationship between anemia and vitamin D in Korean adults: the fifth Korea National Health and Nutrition Examination Survey. J Clin Biochem Nutr. 2021 Nov;69(3):299-304. https://doi.org/10.3164/jcbn.21-26. Epub 2021 May 28. PMID: 34857993
- Velissari A, Lakiotaki E, Nikolaou V, et al. Genetic polymorphisms in immunity related genes and the vitamin D receptor gene and risk of cutaneous T-cell lymphoma in Greek population. J Eur Acad Dermatol Venereol. 2021 Nov;35(11):e805-e807. https://doi.org/10.1111/jdv.17482. Epub 2021 Jul 12. PMID: 34173274
- Wang W, Liu J, Chen K, et al. Vitamin D promotes autophagy in AML cells by inhibiting miR-17-5p-induced Beclin-1 overexpression. Mol Cell Biochem. 2021 Nov;476(11):3951-3962. https://doi.org/10.1007/s11010-021-04208-z. Epub 2021 Jun 29. PMID: 34185245

IMMUNOLOGY

- Ao T, Kikuta J, Ishii M. The Effects of Vitamin D on Immune System and Inflammatory Diseases. Biomolecules. 2021 Nov 3;11(11):1624. https://doi.org/10.3390/biom11111624. PMID: 34827621
- Bhutia SK. Vitamin D in autophagy signaling for health and diseases: Insights on potential mechanisms and future perspectives. J Nutr Biochem. 2022 Jan;99:108841. https://doi.org/10.1016/j.jnutbio.2021.108841. Epub 2021 Aug 14. PMID: 34403722 Review.
- Català-Moll F, Ferreté-Bonastre AG, Godoy-Tena G, et al. Vitamin D receptor, STAT3, and TET2 cooperate to establish tolerogenesis. Cell Rep. 2022 Jan 18;38(3):110244. https://doi.org/10.1016/j.celrep.2021.110244. PMID: 35045292
- Chan H, Li Q, Wang X, et al. Vitamin D(3) and carbamazepine protect against Clostridioides difficile infection in mice by restoring macrophage lysosome acidification. Autophagy. 2022 Jan 6:1-18. https://doi.org/10.1080/15548627.2021.2016004. Online ahead of print. PMID: 34989311
- Chauss D, Freiwald T, McGregor R, et al. Autocrine vitamin D signaling switches off pro-inflammatory programs of T(H)1 cells. Nat Immunol. 2022 Jan;23(1):62-74. https://doi.org/10.1038/s41590-021-01080-3. Epub 2021 Nov 11. PMID: 34764490
- Costenbader KH. Vitamin D and fish oil supplements and risk of autoimmune disease. BMJ. 2022 Jan 28;376:o243. https://doi.org/10.1136/bmj.o243. PMID: 35091393
- De Matteis C, Crudele L, Cariello M, et al. Monocyte-to-HDL Ratio (MHR) Predicts Vitamin D Deficiency in Healthy and Metabolic Women: A Cross-Sectional Study in 1048 Subjects. Nutrients. 2022 Jan 14;14(2):347. https://doi.org/10.3390/nu14020347. PMID: 35057532
- Dzavakwa NV, Chisenga M, McHugh G, et al. Vitamin D(3) and calcium carbonate supplementation for adolescents with HIV to reduce musculoskeletal morbidity and immunopathology (VITALITY trial): study protocol for a randomised placebo-controlled trial. Trials. 2022 Jan 26;23(1):78. https://doi.org/10.1186/s13063-021-05985-0. PMID: 35081986
- Hahn J, Cook NR, Alexander EK, et al. Vitamin D and marine omega 3 fatty acid supplementation and incident autoimmune disease: VITAL randomized controlled trial. BMJ. 2022 Jan 26;376:e066452. https://doi.org/10.1136/bmj-2021-066452. PMID: 35082139
- Hanel A, Carlberg C. Time-Resolved Gene Expression Analysis Monitors the Regulation of Inflammatory Mediators and Attenuation of Adaptive Immune Response by Vitamin D. Int J Mol Sci. 2022 Jan 14;23(2):911. https://doi.org/10.3390/ijms23020911. PMID: 35055093
- Huang J, An Q, Ju BM, et al. Role of vitamin D/VDR nuclear translocation in down-regulation of NF-kappaB/NLRP3/caspase-1 axis in lupus nephritis. Int Immunopharmacol. 2021 Nov;100:108131. https://doi.org/10.1016/j.intimp.2021.108131. Epub 2021 Sep 15. PMID: 34536747
- Johansson E, Biagini JM, Martin LJ, et al. Vitamin D, skin filaggrin, allergic sensitization, and race: a complex interplay. Ann Allergy Asthma Immunol. 2022 Jan 23:S1081-1206(22)00021-7. https://doi.org/10.1016/j.anai.2022.01.017. Online ahead of print. PMID: 35081436
- Kang MS, Park CY, Lee GY, et al. Effects of in vitro vitamin D treatment on function of T cells and autophagy mechanisms in high-fat diet-induced obese mice. Nutr Res Pract. 2021 Dec;15(6):673-685. https://doi.org/10.4162/nrp.2021.15.6.673. Epub 2021 May 14. PMID: 34858547
- Kim E, Bonnegarde-Bernard A, Opiyo SO, et al. Pollutants enhance IgE sensitization in the gut via local alteration of vitamin D-metabolizing enzymes. Mucosal Immunol. 2022 Jan;15(1):143-153. https://doi.org/10.1038/s41385-021-00440-4. Epub 2021 Sep 9. PMID: 34504311
- Liu J, Shao R, Lan Y, et al. Vitamin D(3) protects turbot (Scophthalmus maximus L.) from bacterial infection. Fish Shellfish Immunol. 2021 Nov;118:25-33. https://doi.org/10.1016/j.fsi.2021.08.024. Epub 2021 Aug 24. PMID: 34450270
- Malmberg HR, Hanel A, Taipale M, et al. Vitamin D Treatment Sequence Is Critical for Transcriptome Modulation of Immune Challenged Primary Human Cells. Front Immunol. 2021 Dec 10;12:754056. https://doi.org/10.3389/fimmu.2021.754056. eCollection 2021. PMID: 34956186
- Maruthai K, Sankar S, Subramanian M. Methylation Status of VDR Gene and its Association with Vitamin D Status and VDR Gene Expression in Pediatric Tuberculosis Disease. Immunol Invest. 2022 Jan;51(1):73-87. https://doi.org/10.1080/08820139.2020.1810702. Epub 2020 Aug 26. PMID: 32847384
- Min J, Jo H, Chung YJ, et al. Vitamin D and the Immune System in Menopause: A Review. J Menopausal Med. 2021 Dec;27(3):109-114. https://doi.org/10.6118/jmm.21011. PMID: 34989184
- Minton K. Vitamin D shuts down T cell-mediated inflammation. Nat Rev Immunol. 2022 Jan;22(1):1. https://doi.org/10.1038/s41577-021-00663-3. PMID: 34799725
- Qurban R, Saeed S, Kanwal W, et al. Potential immune modulatory effect of vitamin D in HIV infection: A review. Clin Nutr

ESPEN. 2022 Feb;47:1-8. https://doi.org/10.1016/j.clnesp.2021.12.005. Epub 2021 Dec 6. PMID: 35063189

- Tamasauskiene L, Golubickaite I, Ugenskiene R, et al. Vitamin D receptor gene polymorphisms in atopy. Immun Inflamm Dis. 2021 Dec;9(4):1153-1159. https://doi.org/10.1002/iid3.487. Epub 2021 Aug 3. PMID: 34343413

- Wherry TLT, Dassanayake R, Casas E, et al. Exogenous Vitamin D(3) Modulates Response of Bovine Macrophages to Mycobacterium avium subsp. paratuberculosis Infection and Is Dependent Upon Stage of Johne's Disease. Front Cell Infect Microbiol. 2022 Jan 17;11:773938. https://doi.org/10.3389/fcimb.2021.773938. eCollection 2021. PMID: 35111692

- White JH. Emerging Roles of Vitamin D-Induced Antimicrobial Peptides in Antiviral Innate Immunity. Nutrients. 2022 Jan 11;14(2):284. https://doi.org/10.3390/nu14020284. PMID: 35057465

- Xiao K, Zhang DC, Hu Y, et al. Potential roles of vitamin D binding protein in attenuating liver injury in sepsis. Mil Med Res. 2022 Jan 20;9(1):4. https://doi.org/10.1186/s40779-022-00365-4. PMID: 35057868

- Yang M, Li F, Zhang R, et al. Alteration of the Intestinal Microbial Flora and the Serum IL-17 Level in Patients with Graves' Disease Complicated with Vitamin D Deficiency. Int Arch Allergy Immunol. 2022;183(2):225-234. https://doi.org/10.1159/000518949. Epub 2021 Sep 20. PMID: 34544076

- Yang X, Ru J, Li Z, et al. Lower vitamin D levels and VDR FokI variants are associated with susceptibility to sepsis: a hospital-based case-control study. Biomarkers. 2022 Mar;27(2):188-195. https://doi.org/10.1080/1354750X.2021.2024598. Epub 2022 Jan 9. PMID: 35001797

- Yang Y, Wei S, Chu K, L et al. Upregulation of autophagy in M2 macrophage by vitamin D alleviates crystalline silica-induced pulmonary inflammatory damage. Ecotoxicol Environ Saf. 2021 Dec 1;225:112730. https://doi.org/10.1016/j.ecoenv.2021.112730. Epub 2021 Aug 31. PMID: 34478973

- Zhu Z, Zhu X, Gu L, et al. Association Between Vitamin D and Influenza: Meta-Analysis and Systematic Review of Randomized Controlled Trials. Front Nutr. 2022 Jan 7;8:799709. https://doi.org/10.3389/fnut.2021.799709. eCollection 2021. PMID: 35071300

LABORATORY

- Abdel Hafez H, Madani H, Abdel Alem S, et al. Is Serum-Ascites Vitamin D Gradient a Valid Marker for Diagnosing Spontaneous Bacterial Peritonitis in Patients with Cirrhotic Ascites? Lab Med. 2021 Nov 2;52(6):567-573. https://doi.org/10.1093/labmed/lmab019. PMID: 33939819

- Albrecht K, Lotz J, Frommer L, et al. A rapid point-of-care assay accurately measures vitamin D. Lackner KJ, Kahaly GJ. J Endocrinol Invest. 2021 Nov;44(11):2485-2492. https://doi.org/10.1007/s40618-021-01575-8. Epub 2021 Apr 22. PMID: 33890251

- Alexandridou A, Schorr P, Stokes CS, et al. Analysis of vitamin D metabolic markers by mass spectrometry: Recent progress regarding the "gold standard" method and integration into clinical practice. Mass Spectrom Rev. 2021 Dec 29. https://doi.org/10.1002/mas.21768. Online ahead of print. PMID: 34967037 Review.

- Antoine T, Le May C, Margier M, et al. The Complex ABCG5/ABCG8 Regulates Vitamin D Absorption Rate and Contributes to its Efflux from the Intestine. Mol Nutr Food Res. 2021 Nov;65(21):e2100617. https://doi.org/10.1002/mnfr.202100617. Epub 2021 Sep 28. PMID: 34510707

- Bach A, Fleischer H, Wijayawardena B, et al. Optimization of Automated Sample Preparation for Vitamin D Determination on a Biomek i7 Workstation. SLAS Technol. 2021 Dec;26(6):615-629. https://doi.org/10.1177/24726303211030291. Epub 2021 Jul 20. PMID: 34282678

- Balcers O, Miranda U, Veilande R. Study of ergocalciferol and cholecalciferol (Vitamin D): Modeled optical properties and optical detection using absorption and Raman spectroscopy. Spectrochim Acta A Mol Biomol Spectrosc. 2022 Mar 15;269:120725. https://doi.org/10.1016/j.saa.2021.120725. Epub 2021 Dec 10. PMID: 34929622

- Bikle DD. Ligand-Independent Actions of the Vitamin D Receptor: More Questions Than Answers. JBMR Plus. 2021 Nov 23;5(12):e10578. https://doi.org/10.1002/jbm4.10578. eCollection 2021 Dec. PMID: 34950833

- Charoenngam N, Holick MF. Marked Underestimation of Serum 25-hydroxyvitamin D Concentrations by The Abbot Architect Chemiluminescent Microparticle Immunoassay in Patients Receiving Vitamin D(2) Supplementation. Endocr Pract. 2022 Jan;28(1):122-123. https://doi.org/10.1016/j.eprac.2021.10.002. Epub 2021 Oct 15. PMID: 34656785

- de Melo Bacha FV, Gomez FLC, Silva ALG, et al. Vitamin D: a 14-year retrospective study at a clinical laboratory in Brazil. Arch Endocrinol Metab. 2022 Jan 13:2359-3997000000427. https://doi.org/10.20945/2359-3997000000427. Online ahead of print. PMID: 35029851

- Ding MY, Peng Y, Li F, et al. Andrographolide derivative as antagonist of vitamin D receptor to induce lipidation of microtubule associate protein 1 light chain 3 (LC3). Bioorg Med Chem. 2021 Dec 1;51:116505. https://doi.org/10.1016/j.bmc.2021.116505. Epub 2021 Nov 10. PMID: 34781081

- Duchow EG, Duchow MW, Plum LA, et al. Vitamin D binding protein greatly improves bioactivity but is not essential for orally administered vitamin D. Physiol Rep. 2021 Dec;9(23):e15138. https://doi.org/10.14814/phy2.15138. PMID: 34873873

- Fronczek M, Strzelczyk JK, Biernacki K, et al. New Variants of the Cytochrome P450 2R1 (CYP2R1) Gene in Individuals with Severe Vitamin D-Activating Enzyme 25(OH)D Deficiency. Biomolecules. 2021 Dec 12;11(12):1867. https://doi.org/10.3390/biom11121867. PMID: 34944511

- Fu B, Ren Q, Ma J, et al. Enhancing the production of physiologically active vitamin D(3) by engineering the hydroxylase CYP105A1 and the electron transport chain. World J Microbiol Biotechnol. 2021 Dec 8;38(1):14. https://doi.org/10.1007/s11274-021-03193-1. PMID: 34877634

- Grant WB. 25-hydroxyvitamin D concentration is key to analyzing vitamin D's effects. J Fam Pract. 2021 Dec;70(10):472. PMID: 35119984

- Jambo H, Dispas A, Hubert C, et al. Gener-

ic SFC-MS methodology for the quality control of vitamin D(3) oily formulations. J Pharm Biomed Anal. 2022 Feb 5;209:114492. https://doi.org/10.1016/j.jpba.2021.114492. Epub 2021 Nov 25. PMID: 34864591

- Jenkinson C, Desai R, McLeod MD, et al. Circulating Conjugated and Unconjugated Vitamin D Metabolite Measurements by Liquid Chromatography Mass Spectrometry. J Clin Endocrinol Metab. 2022 Jan 18;107(2):435-449. https://doi.org/10.1210/clinem/dgab708. PMID: 34570174

- Kawagoe F, Mototani S, Kittaka A. The Synthesis and Biological Evaluation of D-Ring-Modified Vitamin D Analogues. Biomolecules. 2021 Nov 4;11(11):1639. https://doi.org/10.3390/biom11111639. PMID: 34827637

- Long W, Johnson J, Kalyaanamoorthy S, et al. TRPV1 channels as a newly identified target for vitamin D. Channels (Austin). 2021 Dec;15(1):360-374. https://doi.org/10.1080/19336950.2021.1905248. PMID: 33825665

- Mizumoto Y, Sakamoto R, Nagata A, et al. Synthesis of C2-Alkoxy-Substituted 19-Nor Vitamin D(3) Derivatives: Stereoselectivity and Biological Activity. Biomolecules. 2022 Jan 4;12(1):69. https://doi.org/10.3390/biom12010069. PMID: 35053217

- Muller Kobold AC, Kema IP, Dijck-Brouwer J, et al. Pepsin pretreatment corrects underestimation of 25-hydroxyvitamin D measurement by an automated immunoassay in subjects with high vitamin D binding protein levels. Clin Chem Lab Med. 2021 Sep 1;60(1):e18-e20. https://doi.org/10.1515/cclm-2021-0722. Print 2022 Jan 26. PMID: 34464525

- Palmer D, Soule S, Gaddam RR, et al. Unbound vitamin D concentrations are not decreased in critically ill patients. Intern Med J. 2022 Jan;52(1):89-94. https://doi.org/10.1111/imj.15096. PMID: 33040415

- Rozmus D, Płomiński J, Augustyn K, et al. rs7041 and rs4588 Polymorphisms in Vitamin D Binding Protein Gene (VDBP) and the Risk of Diseases. Int J Mol Sci. 2022 Jan 15;23(2):933. https://doi.org/10.3390/ijms23020933. PMID: 35055118

- Sempos CT, Williams EL, Carter GD, et al. Assessment of serum total 25-hydroxyvitamin D assays for Vitamin D External Quality Assessment Scheme (DEQAS) materials distributed at ambient and frozen conditions. Anal Bioanal Chem. 2022 Jan;414(2):1015-1028. https://doi.org/10.1007/s00216-021-03742-5. Epub 2021 Nov 9. PMID: 34750644

- Tuddenham C, Greaves RF, Rajapaksa AE, et al. Detection of Vitamin D Metabolites in Breast Milk: Perspectives and challenges for measurement by Liquid Chromatography Tandem-Mass Spectrometry. Clin Biochem. 2021 Nov;97:1-10. https://doi.org/10.1016/j.clinbiochem.2021.08.003. Epub 2021 Aug 19. PMID: 34419456 Review.

- Vugt SV, de Schepper E, van Delft S, et al. Effectiveness of professional and patient-oriented strategies in reducing vitamin D and B12 test ordering in primary care: a cluster randomised intervention study. BJGP Open. 2021 Dec 14;5(6):BJGPO.2021.0113. https://doi.org/10.3399/BJGPO.2021.0113. Print 2021. PMID: 34407963

- Wise SA, Camara JE, Burdette CQ, et al. Interlaboratory comparison of 25-hydroxyvitamin D assays: Vitamin D Standardization Program (VDSP) Intercomparison Study 2 - Part 1 liquid chromatography - tandem mass spectrometry (LC-MS/MS) assays - impact of 3-epi-25-hydroxyvitamin D(3) on assay performance. Anal Bioanal Chem. 2022 Jan;414(1):333-349. https://doi.org/10.1007/s00216-021-03576-1. Epub 2021 Aug 25. PMID: 34432104

- Wise SA, Camara JE, Burdette CQ, et al. Interlaboratory comparison of 25-hydroxyvitamin D assays: Vitamin D Standardization Program (VDSP) Intercomparison Study 2 - Part 2 ligand binding assays - impact of 25-hydroxyvitamin D(2) and 24R,25-dihydroxyvitamin D(3) on assay performance. Anal Bioanal Chem. 2022 Jan;414(1):351-366. https://doi.org/10.1007/s00216-021-03577-0. Epub 2021 Aug 25. PMID: 34435207

- Yoshihara A, Kawasaki H, Masuno H, et al. Lithocholic Acid Amides as Potent Vitamin D Receptor Agonists. Biomolecules. 2022 Jan 14;12(1):130. https://doi.org/10.3390/biom12010130. PMID: 35053278

- Zhang Y, Ji W, Zhang S, et al. Vitamin D Inhibits the Early Aggregation of alpha-Synuclein and Modulates Exocytosis Revealed by Electrochemical Measurements. Angew Chem Int Ed Engl. 2022 Jan 3;61(1):e202111853. https://doi.org/10.1002/anie.202111853. Epub 2021 Nov 22. PMID: 34734656

- Zhang YG, Xia Y, Sun J. A simple and sensitive method to detect vitamin D receptor expression in various disease models using stool samples. Genes Dis. 2020 Mar 17;8(6):939-945. https://doi.org/10.1016/j.gendis.2020.03.002. eCollection 2021 Nov. PMID: 34522720

- Zhu A, Kuznia S, Niedermaier T, et al. Distribution and Determinants of Vitamin D-Binding Protein, Total, "Non-Bioavailable", Bioavailable, and Free 25-Hydroxyvitamin D Concentrations among Older Adults. Nutrients. 2021 Nov 9;13(11):3982. https://doi.org/10.3390/nu13113982. PMID: 34836237

MISCELLANEOUS

- Abril Rubio A, Arjona González P, et al. [Adequacy of the prescription of vitamin D in Primary Care]. Semergen. 2022 Jan-Feb;48(1):38-44. https://doi.org/10.1016/j.semerg.2021.07.010. Epub 2021 Aug 29. PMID: 34465546

- Abu Jadayil S, Abu Jadayel B, Takruri H, et al. Study of the fluctuation of serum vitamin D concentration with time during the same day and night on a random sample of healthy adults. Clin Nutr ESPEN. 2021 Dec;46:499-504. https://doi.org/10.1016/j.clnesp.2021.09.002. Epub 2021 Sep 20. PMID: 34857241

- Adebayo FA, Itkonen ST, Öhman T, et al. Safety of Vitamin D Food Fortification and Supplementation: Evidence from Randomized Controlled Trials and Observational Studies. Foods. 2021 Dec 9;10(12):3065. https://doi.org/10.3390/foods10123065. PMID: 34945616

- Agius C, Micallef D, Brincat I, et al. Plasma Total Ascorbic Acid and Serum 25-Hydroxy-Vitamin-D Status in Patients with Venous Leg Ulcers: A Case-Control Study. Int J Low Extrem Wounds. 2021 Dec 6:15347346211061967. https://doi.org/10.1177/15347346211061967. Online ahead of print. PMID: 34866446

- Al-Hassan S, Attia H, Alomar H, et al. The inhibitory mechanisms of losartan and vitamin D on amiodarone-induced lung inflammation in rats: Role of mitogen-activated protein kinases/activator protein-1. J Biochem

Mol Toxicol. 2021 Dec;35(12):e22923. https://doi.org/10.1002/jbt.22923. Epub 2021 Sep 30. PMID: 34590760

- Araujo P, Méndez-Dávila C. Challenges Ahead for a Rational Analysis of Vitamin D in Athletes. Front Nutr. 2021 Nov 8;8:712335. https://doi.org/10.3389/fnut.2021.712335. eCollection 2021. PMID: 34820410
- Asif A, Farooq N. Vitamin D Toxicity. 2021 Apr 29. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 32491799
- Ataide FL, Carvalho Bastos LM, Vicente Matias MF, et al. Safety and effectiveness of vitamin D mega-dose: A systematic review. Clin Nutr ESPEN. 2021 Dec;46:115-120. https://doi.org/10.1016/j.clnesp.2021.09.010. Epub 2021 Sep 25. PMID: 34857184
- Augustine LF, Nair KM, Kulkarni B. Sun exposure as a strategy for acquiring vitamin D in developing countries of tropical region: Challenges & way forward. Indian J Med Res. 2021 Dec 2. https://doi.org/10.4103/ijmr.IJMR_1244_18. Online ahead of print. PMID: 34854426 Review.
- Bagheri S, Saghazade AR, Abbaszadeh-Mashkani S, et al. The effect of vitamin D supplementation on tobacco-related disorders in individuals with a tobacco use disorder: a randomized clinical trial. J Addict Dis. 2021 Dec 28:1-12. https://doi.org/10.1080/10550887.2021.2010971. Online ahead of print. PMID: 34962457
- Baram L, Dai Z, McDonald S, et al. Disclosure of funding sources and conflicts of interest in evidence underpinning vitamin D and calcium recommendations in bone health guidelines. Public Health Nutr. 2022 Jan 24:1-23. https://doi.org/10.1017/S1368980022000246. Online ahead of print. PMID: 35067274
- Benini C, Esposito D, Adami G, et al. Calcium and vitamin D supplementation: when and why. Minerva Obstet Gynecol. 2021 Dec;73(6):704-713. https://doi.org/10.23736/S2724-606X.20.04682-1. PMID: 34905876 Review.
- Bilezikian JP, Formenti AM, Adler RA, et al. Vitamin D: Dosing, levels, form, and route of administration: Does one approach fit all? Rev Endocr Metab Disord. 2021 Dec;22(4):1201-1218. https://doi.org/10.1007/s11154-021-09693-7. Epub 2021 Dec 23. PMID: 34940947
- Blackmur JP, Vaughan-Shaw PG, Donnelly K, et al. Gene Co-Expression Network Analysis Identifies Vitamin D-Associated Gene Modules in Adult Normal Rectal Epithelium Following Supplementation. Front Genet. 2022 Jan 4;12:783970. https://doi.org/10.3389/fgene.2021.783970. eCollection 2021. PMID: 35096006
- Bleizgys A. Vitamin D Dosing: Basic Principles and a Brief Algorithm (2021 Update). Nutrients. 2021 Dec 10;13(12):4415. https://doi.org/10.3390/nu13124415. PMID: 34959969
- Bouillon R, Manousaki D, Rosen C, et al. The health effects of vitamin D supplementation: evidence from human studies. Nat Rev Endocrinol. 2022 Feb;18(2):96-110. https://doi.org/10.1038/s41574-021-00593-z. Epub 2021 Nov 23. PMID: 34815552
- Butler-Laporte G, Richards JB. Targeting of vitamin D supplementation to individuals with deficiency. Lancet Diabetes Endocrinol. 2021 Dec;9(12):803-804. https://doi.org/10.1016/S2213-8587(21)00282-5. Epub 2021 Oct 28. PMID: 34717823
- Cabalín C, Iturriaga C, Pérez-Mateluna G, et al. Vitamin D status and supplementation in Antarctica: a systematic review and meta- analysis. Int J Circumpolar Health. 2021 Dec;80(1):1926133. https://doi.org/10.1080/22423982.2021.1926133. PMID: 33983101
- Cantista M, Quiaios L, Nguyen S, et al. [To D or not to D ? Why and how to treat vitamin D deficiency in older patients]. Rev Med Suisse. 2021 Nov 3;17(757):1894-1897. PMID: 34738765 French.
- Cashman KD. Global View of Per Capita Daily Vitamin D Supply Estimates as Proxy Measures for Vitamin D Intake Data. JBMR Plus. 2021 Sep 15;5(12):e10547. https://doi.org/10.1002/jbm4.10547. eCollection 2021 Dec. PMID: 34950824
- Castillo-Castellanos F, Ramírez L, Lomelí H. zmiz1a zebrafish mutants have defective erythropoiesis, altered expression of autophagy genes, and a deficient response to vitamin D. Life Sci. 2021 Nov 1;284:119900. https://doi.org/10.1016/j.lfs.2021.119900. Epub 2021 Aug 25. PMID: 34453946
- Chauhan K, Shahrokhi M, Huecker MR. Vitamin D. 2021 Aug 26. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 28722941
- Clarke KE, Hurst EA, Mellanby RJ. Vitamin D metabolism and disorders in dogs and cats. J Small Anim Pract. 2021 Nov;62(11):935-947. https://doi.org/10.1111/jsap.13401. Epub 2021 Jul 29. PMID: 34323302 Review.
- Colonetti T, Grande AJ, da Rocha FR, et al. Whey protein and vitamin D supplementation in institutionalized older adults: A randomized trial. Nutr Health. 2021 Dec 13:2601060211060665. https://doi.org/10.1177/02601060211060665. Online ahead of print. PMID: 34894861
- Cornejo-Pareja I, Ramirez M, Camprubi-Robles M, et al. Effect on an Oral Nutritional Supplement with beta-Hydroxy-beta-methylbutyrate and Vitamin D on Morphofunctional Aspects, Body Composition, and Phase Angle in Malnourished Patients. Nutrients. 2021 Dec 3;13(12):4355. https://doi.org/10.3390/nu13124355. PMID: 34959907
- Dai T, Jiao L, Tao X, et al. Effects of dietary vitamin D(3) supplementation on the growth performance, tissue Ca and P concentrations, antioxidant capacitiy, immune response and lipid metabolism in Litopenaeus vannamei larvae. Br J Nutr. 2021 Dec 9:1-20. https://doi.org/10.1017/S0007114521004931. Online ahead of print. PMID: 34879881
- Diachkova E, Trifonova D, Morozova E, et al. Vitamin D and Its Role in Oral Diseases Development. Scoping Review. Dent J (Basel). 2021 Nov 2;9(11):129. https://doi.org/10.3390/dj9110129. PMID: 34821593
- Dowley A, Sweeney T, Conway E, et al. Effects of Dietary Supplementation with Mushroom or Vitamin D(2)-Enriched Mushroom Powders on Gastrointestinal Health Parameters in the Weaned Pig. Animals (Basel). 2021 Dec 20;11(12):3603. https://doi.org/10.3390/ani11123603. PMID: 34944378
- Fleet JC, Aldea D, Chen L, et al. Regulatory domains controlling high intestinal vitamin D receptor (VDR) gene expression are conserved in mouse and human. J Biol Chem. 2022 Jan 20:101616. https://doi.org/10.1016/j.jbc.2022.101616. Online ahead of print. PMID: 35065959

- Fraile Navarro D, López García-Franco A, Niño de Guzmán E, et al. Vitamin D recommendations in clinical guidelines: A systematic review, quality evaluation and analysis of potential predictors. Int J Clin Pract. 2021 Nov;75(11):e14805. https://doi.org/10.1111/ijcp.14805. Epub 2021 Sep 15. PMID: 34486779

- Fraser DR. Vitamin D toxicity related to its physiological and unphysiological supply. Trends Endocrinol Metab. 2021 Nov;32(11):929-940. https://doi.org/10.1016/j.tem.2021.08.006. Epub 2021 Sep 10. PMID: 34518055 Review.

- Gemcioglu E, Baser S, Yilmaz Cakmak N, et al. Assessing Oxidative Stress by Thiol/Disulfide Homeostasis Among Vitamin D-Deficient Patients. Cureus. 2021 Dec 13;13(12):e20400. https://doi.org/10.7759/cureus.20400. eCollection 2021 Dec. PMID: 35047246

- Girgis CM, Brennan-Speranza TC. Vitamin D and Skeletal Muscle: Current Concepts From Preclinical Studies. JBMR Plus. 2021 Nov 15;5(12):e10575. https://doi.org/10.1002/jbm4.10575. eCollection 2021 Dec. PMID: 34950830

- Guralnik JM, Sternberg AL, Mitchell CM, et al. Effects of Vitamin D on Physical Function: Results from the STURDY Trial. J Gerontol A Biol Sci Med Sci. 2021 Dec 20:glab379. https://doi.org/10.1093/gerona/glab379. Online ahead of print. PMID: 34928336

- Hennigar SR, Kelley AM, Nakayama AT, et al. Divergent effects of sex and calcium/vitamin D supplementation on serum magnesium and markers of bone structure and function during initial military training. Br J Nutr. 2021 Nov 24:1-8. https://doi.org/10.1017/S0007114521004669. Online ahead of print. PMID: 34814952

- Heo JC, Kim D, An H, et al. A Novel Biosensor and Algorithm to Predict Vitamin D Status by Measuring Skin Impedance. Sensors (Basel). 2021 Dec 4;21(23):8118. https://doi.org/10.3390/s21238118. PMID: 34884121

- Hribová P, Sotak Š. VITAMIN D AND OPHTHALMOPATHIAS. A REVIEW. Cesk Slov Oftalmol. 2022 Winter;2(Ahead of Print):1001-1004. PMID: 35105147

- Hu D, Yang X, Hu C, et al. Comparison of Ergosterol and Vitamin D(2) in Mushrooms Agaricus bisporus and Cordyceps militaris Using Ultraviolet Irradiation Directly on Dry Powder or in Ethanol Suspension. ACS Omega. 2021 Oct 26;6(44):29506-29515. https://doi.org/10.1021/acsomega.1c03561. eCollection 2021 Nov 9. PMID: 34778622

- Jachvadze M, Cholokava N, Gogberashvili K. INFLUENCE OF VITAMIN D ON HUMAN HEALTH (REVIEW). Georgian Med News. 2021 Dec;(321):36-41. PMID: 35000906 Review.

- Janjusevic M, Gagno G, Fluca AL, et al. The peculiar role of vitamin D in the pathophysiology of cardiovascular and neurodegenerative diseases. Life Sci. 2022 Jan 15;289:120193. https://doi.org/10.1016/j.lfs.2021.120193. Epub 2021 Dec 3. PMID: 34864062 Review.

- Jones G, Kaufmann M. Diagnostic Aspects of Vitamin D: Clinical Utility of Vitamin D Metabolite Profiling. JBMR Plus. 2021 Dec 3;5(12):e10581. https://doi.org/10.1002/jbm4.10581. eCollection 2021 Dec. PMID: 34950834

- Kalavathy N, Anantharaj N, Sharma A, et al. Effect of serum vitamin D, calcium, and phosphorus on mandibular residual ridge resorption in completely edentulous participants: A clinical study. J Prosthet Dent. 2022 Jan;127(1):93-99. https://doi.org/10.1016/j.prosdent.2020.07.019. Epub 2020 Nov 18. PMID: 33218746

- Kechrid Z, Hamdiken M, Nazıroğlu M, et al. Correction to: Vitamin D Supplementation Modulates Blood and Tissue Zinc, Liver Glutathione and Blood Biochemical Parameters in Diabetic Rats on a Zinc-Deficient Diet. Biol Trace Elem Res. 2022 Jan 27. https://doi.org/10.1007/s12011-022-03116-7. Online ahead of print. PMID: 35083710

- Khan RU, Naz S, Ullah H, et al. Dietary vitamin D: growth, physiological and health consequences in broiler production. Anim Biotechnol. 2021 Dec 19:1-7. https://doi.org/10.1080/10495398.2021.2013861. Online ahead of print. PMID: 34923931

- Krušič S, Hribar M, Hafner E, et al. Use of Branded Food Composition Databases for the Exploitation of Food Fortification Practices: A Case Study on Vitamin D in the Slovenian Food Supply. Front Nutr. 2022 Jan 4;8:775163. https://doi.org/10.3389/fnut.2021.775163. eCollection 2021. PMID: 35059424

- Köhrle J, Rauner M, Lanham-New SA. 100 YEARS OF VITAMIN D: Light and health: a century after the therapeutic use of UV light and vitamin D, hormones advanced medical care. Endocr Connect. 2022 Jan 31;11(1):EC-21-0609. https://doi.org/10.1530/EC-21-0609. PMID: 34889777

- Lazzara F, Conti F, Platania CBM, et al. Effects of Vitamin D(3) and Meso-Zeaxanthin on Human Retinal Pigmented Epithelial Cells in Three Integrated in vitro Paradigms of Age-Related Macular Degeneration. Front Pharmacol. 2021 Nov 5;12:778165. https://doi.org/10.3389/fphar.2021.778165. eCollection 2021. PMID: 34803719

- Li L, Li WJ, Zheng XR, et al. Eriodictyol ameliorates cognitive dysfunction in APP/PS1 mice by inhibiting ferroptosis via vitamin D receptor-mediated Nrf2 activation. Mol Med. 2022 Jan 29;28(1):11. https://doi.org/10.1186/s10020-022-00442-3. PMID: 35093024

- Lips P, de Jongh RT, van Schoor NM. Trends in Vitamin D Status Around the World. JBMR Plus. 2021 Nov 30;5(12):e10585. https://doi.org/10.1002/jbm4.10585. eCollection 2021 Dec. PMID: 34950837

- Lira Dos Santos EJ, Chavez MB, Tan MH, et al. Effects of Active Vitamin D or FGF23 Antibody on Hyp Mice Dentoalveolar Tissues. J Dent Res. 2021 Dec;100(13):1482-1491. https://doi.org/10.1177/00220345211011041. Epub 2021 Apr 27. PMID: 33906518

- Liu D, Meng X, Tian Q, et al. Vitamin D and Multiple Health Outcomes: An Umbrella Review of Observational Studies, Randomized Controlled Trials, and Mendelian Randomization Studies. Adv Nutr. 2021 Nov 23:nmab142. https://doi.org/10.1093/advances/nmab142. Online ahead of print. PMID: 34999745

- Liu S, Wang X, Bu X, et al. Impact of Dietary Vitamin D(3) Supplementation on Growth, Molting, Antioxidant Capability, and Immunity of Juvenile Chinese Mitten Crabs (Eriocheir sinensis) by Metabolites and Vitamin D Receptor. J Agric Food Chem. 2021 Nov 3;69(43):12794-12806. https://doi.org/10.1021/acs.jafc.1c04204. Epub 2021 Oct 22. PMID: 34677964

- Makke A. Vitamin D Supplementation for Prevention of Dental Implant Failure: A Systematic Review. Int J Dent. 2022

Jan 12;2022:2845902. https://doi.org/10.1155/2022/2845902. eCollection 2022. PMID: 35069741

- Mandell EW. Vitamin D Deficiency in Development: How Much Is Enough, and How Much Is Too Much? Am J Respir Cell Mol Biol. 2021 Nov;65(5):466-467. https://doi.org/10.1165/rcmb.2021-0218ED. PMID: 34139137
- Mastali VP, Hoseini R, Azizi M. The short-term effect of vitamin D supplementation on the response to muscle and liver damages indices by exhaustive aerobic exercise in untrained men: a quasi-experimental study. BMC Sports Sci Med Rehabil. 2022 Jan 10;14(1):7. https://doi.org/10.1186/s13102-022-00398-1. PMID: 35012626
- Mazess RB, Bischoff-Ferrari HA, Dawson-Hughes B. Vitamin D: Bolus Is Bogus-A Narrative Review. JBMR Plus. 2021 Oct 30;5(12):e10567. https://doi.org/10.1002/jbm4.10567. eCollection 2021 Dec. PMID: 34950828
- Meshkini F, Soltani S, Clark CCT, et al. The effect of vitamin D supplementation on serum levels of fibroblast growth factor- 23: A systematic review and meta-analysis of randomized controlled trials. J Steroid Biochem Mol Biol. 2022 Jan;215:106012. https://doi.org/10.1016/j.jsbmb.2021.106012. Epub 2021 Oct 25. PMID: 34710560
- Moretti M, Paleari L, Figallo F, et al. Italian Public Health Expenditure for Vitamin D is still high: New Outlook to Saving From a Consumption Analysis in the Liguria Region. Clin Ther. 2021 Nov;43(11):1969-1982. https://doi.org/10.1016/j.clinthera.2021.09.008. Epub 2021 Oct 28. PMID: 34756467
- Mulrooney SL, O'Neill GJ, Brougham DF, et al. Improving vitamin D(3) stability to environmental and processing stresses using mixed micelles. Food Chem. 2021 Nov 15;362:130114. https://doi.org/10.1016/j.foodchem.2021.130114. Epub 2021 May 15. PMID: 34087708
- Mu M, Li B, Zou Y, et al. Coal dust exposure triggers heterogeneity of transcriptional profiles in mouse pneumoconiosis and Vitamin D remedies. Part Fibre Toxicol. 2022 Jan 20;19(1):7. https://doi.org/10.1186/s12989-022-00449-y. PMID: 35057792
- Muneer S, Siddiqui I, Majid H, et al. Practices of vitamin D supplementation leading to vitamin D toxicity: Experience from a Low-Middle Income Country. Ann Med Surg (Lond). 2022 Jan 5;73:103227. https://doi.org/10.1016/j.amsu.2021.103227. eCollection 2022 Jan. PMID: 35079366
- Mungai LNW, Mohammed Z, Maina M, et al. Vitamin D Review: The Low Hanging Fruit for Human Health. J Nutr Metab. 2021 Dec 2;2021:6335681. https://doi.org/10.1155/2021/6335681. eCollection 2021. PMID: 34900350
- Neale RE, Baxter C, Romero BD, et al. The D-Health Trial: a randomised controlled trial of the effect of vitamin D on mortality. Lancet Diabetes Endocrinol. 2022 Feb;10(2):120-128. https://doi.org/10.1016/S2213-8587(21)00345-4. Epub 2022 Jan 10. PMID: 35026158
- Neill HR, Gill CIR, McDonald EJ, et al. Vitamin D Biofortification of Pork May Offer a Food-Based Strategy to Increase Vitamin D Intakes in the UK Population. Front Nutr. 2021 Dec 3;8:777364. https://doi.org/10.3389/fnut.2021.777364. eCollection 2021. PMID: 34926552
- Olczak-Kowalczyk D, Kaczmarek U, Gozdowski D, et al. Association of parental-reported vitamin D supplementation with dental caries of 3-year-old children in Poland: a cross-sectional study. Clin Oral Investig. 2021 Nov;25(11):6147-6158. https://doi.org/10.1007/s00784-021-03914-8. Epub 2021 Apr 8. PMID: 33834312
- Pike JW, Meyer MB. New Approaches to Assess Mechanisms of Action of Selective Vitamin D Analogues. Int J Mol Sci. 2021 Nov 16;22(22):12352. https://doi.org/10.3390/ijms222212352. PMID: 34830234
- Pilz S, Trummer C, Theiler-Schwetz V, et al. Critical Appraisal of Large Vitamin D Randomized Controlled Trials. Nutrients. 2022 Jan 12;14(2):303. https://doi.org/10.3390/nu14020303. PMID: 35057483
- Rahman A, Elmi A. Air pollutants are negatively associated with vitamin D-synthesizing UVB radiation intensity on the ground. Sci Rep. 2021 Nov 2;11(1):21480. https://doi.org/10.1038/s41598-021-00980-6. PMID: 34728744
- Raiteri T, Zaggia I, Reano S, et al. The Atrophic Effect of 1,25(OH)(2) Vitamin D(3) (Calcitriol) on C2C12 Myotubes Depends on Oxidative Stress. Antioxidants (Basel). 2021 Dec 12;10(12):1980. https://doi.org/10.3390/antiox10121980. PMID: 34943083
- Rastegar-Moghaddam SH, Hosseini M, Alipour F, et al. The effects of vitamin D on learning and memory of hypothyroid juvenile rats and brain tissue acetylcholinesterase activity and oxidative stress indicators. Naunyn Schmiedebergs Arch Pharmacol. 2022 Mar;395(3):337-351. https://doi.org/10.1007/s00210-021-02195-y. Epub 2022 Jan 4. PMID: 34982186
- Ribeiro MC, MacDonald JL. Vitamin D modulates cortical transcriptome and behavioral phenotypes in an Mecp2 heterozygous Rett syndrome mouse model. Neurobiol Dis. 2022 Jan 25;165:105636. https://doi.org/10.1016/j.nbd.2022.105636. Online ahead of print. PMID: 35091041
- Rouge M, Elkhatib R, Delalande C, et al. Investigation of equine testis contribution to vitamin D bioactivation. Domest Anim Endocrinol. 2021 Nov 1;79:106691. https://doi.org/10.1016/j.domaniend.2021.106691. Online ahead of print. PMID: 34844012
- Sadat-Ali M, AlTabash KW, Al-Turki HA, et al. Time out: should vitamin D dosing be based on patient's body mass index (BMI): a prospective controlled study. J Nutr Sci. 2021 Dec 13;10:e106. https://doi.org/10.1017/jns.2021.100. eCollection 2021. PMID: 35059187
- Schoenmakers I. Vitamin D supplementation and mortality. Lancet Diabetes Endocrinol. 2022 Feb;10(2):88-90. https://doi.org/10.1016/S2213-8587(22)00002-X. Epub 2022 Jan 10. PMID: 35026160
- Schümmer T, Stangl GI, Wätjen W. Safety Assessment of Vitamin D and Its Photo-Isomers in UV-Irradiated Baker's Yeast. Foods. 2021 Dec 18;10(12):3142. https://doi.org/10.3390/foods10123142. PMID: 34945693
- Seyyar SA, Tokuc EO, Tıskaoğlu NS, et al. Do serum vitamin D levels correlate with Macular Edema or with Diabetic Retinopathy? Eur J Ophthalmol. 2022 Jan 28:11206721221076701. https://doi.org/10.1177/11206721221076701. Online ahead of print. PMID: 35088606
- Sizar O, Khare S, Goyal A, et al. Vitamin D Deficiency. 2021 Jul 21. In: StatPearls

[Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 30335299

- Sorkhabi R, Ahoor MH, Ghorbanihaghjo A, et al. Serum vitamin D levels in patients with vernal keratoconjunctivitis and its relationship with disease severity. Eur J Ophthalmol. 2021 Nov;31(6):3259-3264. https://doi.org/10.1177/1120672120978886. Epub 2020 Dec 14. PMID: 33307795
- Sparks AM, Johnston SE, Handel I, et al. Vitamin D status is heritable and under environment-dependent selection in the wild. Mol Ecol. 2021 Dec 9. https://doi.org/10.1111/mec.16318. Online ahead of print. PMID: 34888965
- Tabrizi R, Mohajerani H, Jafari S, et al. Does the serum level of vitamin D affect marginal bone loss around dental implants? Int J Oral Maxillofac Surg. 2021 Dec 3:S0901-5027(21)00394-5. https://doi.org/10.1016/j.ijom.2021.11.006. Online ahead of print. PMID: 34872836
- Taghizadeh N, Sharifan P, Ekhteraee Toosi MS, et al. The effects of consuming a low-fat yogurt fortified with nano encapsulated vitamin D on serum pro-oxidant-antioxidant balance (PAB) in adults with metabolic syndrome; a randomized control trial. Diabetes Metab Syndr. 2021 Nov-Dec;15(6):102332. https://doi.org/10.1016/j.dsx.2021.102332. Epub 2021 Nov 6. PMID: 34781136
- Tracer H, West R. Screening for Vitamin D Deficiency in Adults. Am Fam Physician. 2021 Nov 1;104(5):515-516. PMID: 34783511
- Usategui-Martín R, De Luis-Román DA, Fernández-Gómez JM, et al. Vitamin D Receptor (VDR) Gene Polymorphisms Modify the Response to Vitamin D Supplementation: A Systematic Review and Meta-Analysis. Nutrients. 2022 Jan 15;14(2):360. https://doi.org/10.3390/nu14020360. PMID: 35057541
- Virtanen JK, Nurmi T, Aro A, et al. Vitamin D supplementation and prevention of cardiovascular disease and cancer in the Finnish Vitamin D Trial-a randomized controlled trial. Am J Clin Nutr. 2022 Jan 4:nqab419. https://doi.org/10.1093/ajcn/nqab419. Online ahead of print. PMID: 34982819
- Wu TY, Zhao LX, Zhang YH, et al. Activation of vitamin D receptor inhibits Tau phosphorylation is associated with reduction of iron accumulation in APP/PS1 transgenic mice. Neurochem Int. 2022 Feb;153:105260. https://doi.org/10.1016/j.neuint.2021.105260. Epub 2021 Dec 22. PMID: 34953963
- Xavier TA, Madalena IR, da Silva RAB, et al. Vitamin D deficiency is a risk factor for delayed tooth eruption associated with persistent primary tooth. Acta Odontol Scand. 2021 Nov;79(8):600-605. https://doi.org/10.1080/00016357.2021.1918762. Epub 2021 May 4. PMID: 33944665
- Yang N, Chang N, Zhang G, et al. Analysis of the relationship between frailty index and 25(OH) vitamin D in elderly inpatients. Pak J Pharm Sci. 2021 Nov;34(6(Supplementary)):2297-2301. PMID: 35039266
- Zhang H, Liu Y, Fang X, et al. Vitamin D(3) Protects Mice from Diquat-Induced Oxidative Stress through the NF-kappaB/Nrf2/HO-1 Signaling Pathway. Oxid Med Cell Longev. 2021 Nov 16;2021:6776956. https://doi.org/10.1155/2021/6776956. eCollection 2021. PMID: 34824670

NEPHROLOGY

- Ahmed B, Nasir K, Mehmood A, et al. Effect of physical activity and vitamin D compared with vitamin D alone on muscle strength, back flexibility and aerobic activity in patients with chronic kidney disease: A comparative study from Pakistan. Asia Pac J Clin Nutr. 2021 Dec;30(4):566-572. https://doi.org/10.6133/apjcn.202112_30(4).0002. PMID: 34967184 Free article. Clinical Trial.
- Bargagli M, Ferraro PM, Vittori M, et al. Calcium and Vitamin D Supplementation and Their Association with Kidney Stone Disease: A Narrative Review. Nutrients. 2021 Dec 4;13(12):4363. https://doi.org/10.3390/nu13124363. PMID: 34959915
- Battaglia Y, Bellasi A, Bortoluzzi A, et al. Bone Mineral Density Changes in Long-Term Kidney Transplant Recipients: A Real-Life Cohort Study of Native Vitamin D Supplementation. Nutrients. 2022 Jan 13;14(2):323. https://doi.org/10.3390/nu14020323. PMID: 35057505
- Boer W, Fivez T, Vander Laenen M, et al. Citrate dose for continuous hemofiltration: effect on calcium and magnesium balance, parathormone and vitamin D status, a randomized controlled trial. BMC Nephrol. 2021 Dec 11;22(1):409. https://doi.org/10.1186/s12882-021-02598-2. PMID: 34895160
- Cozzolino M, Bernard L, Csomor PA. Active vitamin D increases the risk of hypercalcaemia in non-dialysis chronic kidney disease patients with secondary hyperparathyroidism: a systematic review and meta-analysis. Clin Kidney J. 2021 May 28;14(11):2437-2443. https://doi.org/10.1093/ckj/sfab091. eCollection 2021 Nov. PMID: 34754440
- de Alarcón R, Alburquerque-González B, Fernández-Valera Á, et al. Pharmacogenetic role of vitamin D-binding protein and vitamin D receptor polymorphisms in the treatment response of dialysis patients with secondary hyperparathyroidism. Nephrol Dial Transplant. 2021 Dec 9:gfab353. https://doi.org/10.1093/ndt/gfab353. Online ahead of print. PMID: 34888693
- Delrue C, Speeckaert R, Delanghe JR, et al. The Role of Vitamin D in Diabetic Nephropathy: A Translational Approach. Int J Mol Sci. 2022 Jan 12;23(2):807. https://doi.org/10.3390/ijms23020807. PMID: 35054991
- Dittmer KE, Chernyavtseva A, Marshall JC, et al. Expression of Renal Vitamin D and Phosphatonin-Related Genes in a Sheep Model of Osteoporosis. Animals (Basel). 2021 Dec 29;12(1):67. https://doi.org/10.3390/ani12010067. PMID: 35011173
- Dusso AS, Bauerle KT, Bernal-Mizrachi C. Non-classical Vitamin D Actions for Renal Protection. Front Med (Lausanne). 2021 Dec 7;8:790513. https://doi.org/10.3389/fmed.2021.790513. eCollection 2021. PMID: 34950686
- El Borolossy R, El-Farsy MS. The impact of vitamin K2 and native vitamin D supplementation on vascular calcification in pediatric patients on regular hemodialysis. A randomized controlled trial. Eur J Clin Nutr. 2021 Nov 29. https://doi.org/10.1038/s41430-021-01050-w. Online ahead of print. PMID: 34845313
- Galassi A, Ciceri P, Porata G, et al. Current treatment options for secondary hyperparathyroidism in patients with stage 3 to 4 chronic kidney disease and vitamin D deficiency. Expert Opin Drug Saf. 2021 Nov;20(11):1333-1349. https://doi.org/10.1080/14740338.2021.1931117. Epub 2021 Jun 9. PMID: 33993809 Review

- Grube M, Weber F, Kahl AL, et al. Effect of High Dose Active Vitamin D Therapy on the Development of Hypocalcemia After Subtotal Parathyroidectomy in Patients on Chronic Dialysis. Int J Nephrol Renovasc Dis. 2021 Nov 11;14:399-410. https://doi.org/10.2147/IJNRD.S334227. eCollection 2021. PMID: 34795499

- Koohpeyma F, Ranjbar Omrani G, Zamani A, et al. Effects of Paricalcitol on Body Composition in Vitamin D-Deficient Rats. Iran J Med Sci. 2021 Nov;46(6):468-474. https://doi.org/10.30476/ijms.2020.85368.1503. PMID: 34840387

- Koshi-Ito E, Inaguma D, Koide S, et al. Relationship between selection of dosage forms of vitamin D receptor activators and short-term survival of patients on hemodialysis. Ren Fail. 2021 Dec;43(1):1528-1538. https://doi.org/10.1080/0886022X.2021.1995423. PMID: 34787531

- Latic N, Erben RG. FGF23 and Vitamin D Metabolism. JBMR Plus. 2021 Oct 13;5(12):e10558. https://doi.org/10.1002/jbm4.10558. eCollection 2021 Dec. PMID: 34950827

- Liu B, Yang Q, Zhao L, et al. Vitamin D receptor gene polymorphism predicts left ventricular hypertrophy in maintenance hemodialysis. BMC Nephrol. 2022 Jan 15;23(1):32. https://doi.org/10.1186/s12882-021-02640-3. PMID: 35033017

- Liu L, Xie K, Yin M, et al. Lower serum levels of vitamin D in adults with urinary tract infection. Infection. 2022 Jan 10. https://doi.org/10.1007/s15010-021-01750-2. Online ahead of print. PMID: 35013942

- Lu Y, Wang Y, Sun Y, et al. Effects of active vitamin D on insulin resistance and islet beta-cell function in non-diabetic chronic kidney disease patients: a randomized controlled study. Int Urol Nephrol. 2021 Nov 22. https://doi.org/10.1007/s11255-021-02968-7. Online ahead of print. PMID: 34807347

- Priyadarshini G, Parameswaran S, Sahoo J, et al. Vitamin D deficiency in chronic kidney disease: Myth or reality? Clin Chim Acta. 2021 Dec;523:35-37. https://doi.org/10.1016/j.cca.2021.08.032. Epub 2021 Sep 1. PMID: 34480954

- Shankar AS, van den Berg SAA, Tejeda Mora H, et al. Vitamin D metabolism in human kidney organoids. Nephrol Dial Transplant. 2021 Dec 31;37(1):190-193. https://doi.org/10.1093/ndt/gfab264. PMID: 34534339

- Tanemoto M, Katsuoka Y. Conversion from intravenous maxacalcitol to oral vitamin D in secondary hyperparathyroidism management. Clin Exp Nephrol. 2022 Jan;26(1):97-98. https://doi.org/10.1007/s10157-021-02138-0. Epub 2021 Sep 21. PMID: 34549338

NEUROLOGY

- Araújo de Lima L, Oliveira Cunha PL, Felicio Calou IB, et al. Effects of vitamin D (VD3) supplementation on the brain mitochondrial function of male rats, in the 6-OHDA-induced model of Parkinson's disease. Neurochem Int. 2022 Jan 10;154:105280. https://doi.org/10.1016/j.neuint.2022.105280. Online ahead of print. PMID: 35026378

- Arnett S, Sanchez SJ, Downing J, et al. Low vitamin D levels do not predict risk of autoimmune disease following alemtuzumab treatment for multiple sclerosis. Mult Scler Relat Disord. 2022 Jan 10;59:103511. https://doi.org/10.1016/j.msard.2022.103511. Online ahead of print. PMID: 35093841

- Bakhshaee M, Moradi S, Mohebi M, et al. Association Between Serum Vitamin D Level and Meniere's Disease. Otolaryngol Head Neck Surg. 2022 Jan;166(1):146-150. https://doi.org/10.1177/01945998211000395. Epub 2021 Mar 23. PMID: 33755501

- Beauchet O, Cooper-Brown LA, Allali G. Vitamin D Supplementation and Cognition in Adults: A Systematic Review of Randomized Controlled Trials. CNS Drugs. 2021 Dec;35(12):1249-1264. https://doi.org/10.1007/s40263-021-00876-z. Epub 2021 Nov 22. PMID: 34806158

- Bivona G, Gambino CM, Lo Sasso B, et al. Serum Vitamin D as a Biomarker in Autoimmune, Psychiatric and Neurodegenerative Diseases. Diagnostics (Basel). 2022 Jan 6;12(1):130. https://doi.org/10.3390/diagnostics12010130. PMID: 35054296

- Broberg D, Wong D, Bellyou M, et al. Effects of Memantine and High Dose Vitamin D on Gait in Male APP/PS1 Alzheimer's Disease Mice Following Vitamin D Deprivation. J Alzheimers Dis. 2021 Dec 22. https://doi.org/10.3233/JAD-215188. Online ahead of print. PMID: 34958027

- Canpolat M, Topcu A, Kardas F, et al. An assessment of the relation between vitamin D levels and electroencephalogram (EEG) changes in migraine patients. Bratisl Lek Listy. 2022;123(2):92-99. https://doi.org/10.4149/BLL_2022_014. PMID: 35065584

- Chae B, Shin YS, Kim SM, et al. Association Between Vitamin D Deficiency and Neurologic Outcomes in Patients After Cardiopulmonary Resuscitation. Shock. 2022 Jan 25. https://doi.org/10.1097/SHK.0000000000001909. Online ahead of print. PMID: 35081078

- Chan YH, Schooling CM, Zhao J, et al. Mendelian Randomization Focused Analysis of Vitamin D on the Secondary Prevention of Ischemic Stroke. Stroke. 2021 Dec;52(12):3926-3937. https://doi.org/10.1161/STROKEAHA.120.032634. Epub 2021 Sep 27. PMID: 34565175

- Concerto C, Rodolico A, Ciancio A, et al. Vitamin D and Depressive Symptoms in Adults with Multiple Sclerosis: A Scoping Review. Int J Environ Res Public Health. 2021 Dec 25;19(1):199. https://doi.org/10.3390/ijerph19010199. PMID: 35010459

- de la Rubia Ortí JE, García MF, Drehmer E, et al. Intake of Vitamin D in Patients with Multiple Sclerosis in the Valencian Region and Its Possible Relationship with the Pathogenesis of the Disease. Life (Basel). 2021 Dec 10;11(12):1380. https://doi.org/10.3390/life11121380. PMID: 34947912

- Dell'Isola GB, Tulli E, Sica R, et al. The Vitamin D Role in Preventing Primary Headache in Adult and Pediatric Population. J Clin Med. 2021 Dec 20;10(24):5983. https://doi.org/10.3390/jcm10245983. PMID: 34945279

- de Oliveira DL, Dokkedal-Silva V, Fernandes GL, et al. Sleep duration as an independent factor associated with vitamin D levels in the EPISONO cohort. J Clin Sleep Med. 2021 Dec 1;17(12):2439-2449. https://doi.org/10.5664/jcsm.9452. PMID: 34170232

- Elmoursy MM, Abbas AS. The role of low levels of vitamin D as a co-factor in the relapse of benign paroxysmal positional vertigo (BPPV). Am J Otolaryngol. 2021 Nov-Dec;42(6):103134. https://doi.org/10.1016/j.amjoto.2021.103134. Epub 2021 Jun 19. PMID: 34166965

- Foroughinia F, Morovati N, Safari A, et al. Association between Fok1 and TaqI polymorphisms of vitamin D receptor gene with the severity of stenosis and calcification in carotid bulb in patients with ischemic stroke. J Clin Neurosci. 2022 Jan 25;97:115-120. https://doi.org/10.1016/j.jocn.2022.01.009. Online ahead of print. PMID: 35091316

- Gu YS, Qin L, Li L, et al. [Idiopathic benign paroxysmal positional vertigo with vitamin D]. Zhonghua Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. 2022 Jan 7;57(1):69-71. https://doi.org/10.3760/cma.j.cn115330-20210128-00045. PMID: 35090216 Chinese.

- Głąbska D, Kołota A, Lachowicz K, et al. Vitamin D Supplementation and Mental Health in Multiple Sclerosis Patients: A Systematic Review. Nutrients. 2021 Nov 24;13(12):4207. https://doi.org/10.3390/nu13124207. PMID: 34959758

- Harroud A, Manousaki D, Butler-Laporte G, et al. The relative contributions of obesity, vitamin D, leptin, and adiponectin to multiple sclerosis risk: A Mendelian randomization mediation analysis. Mult Scler. 2021 Nov;27(13):1994-2000. https://doi.org/10.1177/1352458521995484. Epub 2021 Feb 19. PMID: 33605807

- Harse JD, Zhu K, Bucks RS, et al. Investigating Potential Dose-Response Relationships between Vitamin D Status and Cognitive Performance: A Cross-Sectional Analysis in Middle- to Older-Aged Adults in the Busselton Healthy Ageing Study. Int J Environ Res Public Health. 2021 Dec 31;19(1):450. https://doi.org/10.3390/ijerph19010450. PMID: 35010710

- Hernández-Ledesma AL, Rodríguez-Méndez AJ, Gallardo-Vidal LS, et al. Vitamin D status, proinflammatory cytokines and bone mineral density in Mexican people with multiple sclerosis. Mult Scler Relat Disord. 2021 Nov;56:103265. https://doi.org/10.1016/j.msard.2021.103265. Epub 2021 Sep 15. PMID: 34627004

- Hertig-Godeschalk A, Brinkhof MWG, Scheel-Sailer A, et al. Vitamin D supplementation in chronic spinal cord injury (VitD-SCI): study protocol for a randomised controlled trial. BMJ Open. 2021 Dec 17;11(12):e053951. https://doi.org/10.1136/bmjopen-2021-053951. PMID: 34921084

- Hesami O, Iranshahi S, Shahamati SZ, et al. The Evaluation of the Neuroprotective Effect of a Single High-Dose Vitamin D(3) in Patients with Moderate Ischemic Stroke. Stroke Res Treat. 2022 Jan 17;2022:8955660. https://doi.org/10.1155/2022/8955660. eCollection 2022. PMID: 35083032

- Hu C, Fan Y, Wu S, et al. Vitamin D supplementation for the treatment of migraine: A meta-analysis of randomized controlled studies. Am J Emerg Med. 2021 Dec;50:784-788. https://doi.org/10.1016/j.ajem.2021.07.062. Epub 2021 Aug 11. PMID: 34879503 Review.

- Inan HC, Mertoğlu C, Erdur ZB. Investigation of Serum Calcium and 25-Hydroxy Vitamin D Levels in Benign Paroxysmal Positional Vertigo Patients. Ear Nose Throat J. 2021 Nov;100(9):643-646. https://doi.org/10.1177/0145561321989451. Epub 2021 Jan 25. PMID: 33491490

- Kang JH, Vyas CM, Okereke OI, et al. Effect of vitamin D on cognitive decline: results from two ancillary studies of the VITAL randomized trial. Sci Rep. 2021 Dec 1;11(1):23253. https://doi.org/10.1038/s41598-021-02485-8. PMID: 34853363

- Lai RH, Hsu YY, Shie FS, et al. Non-genomic rewiring of vitamin D receptor to p53 as a key to Alzheimer's disease. Aging Cell. 2021 Dec;20(12):e13509. https://doi.org/10.1111/acel.13509. Epub 2021 Nov 2. PMID: 34725922

- Larsen AU, Hopstock LA, Jorde R, et al. No improvement of sleep from vitamin D supplementation: insights from a randomized controlled trial. Sleep Med X. 2021 Oct 19;3:100040. https://doi.org/10.1016/j.sleepx.2021.100040. eCollection 2021 Dec. PMID: 34881361

- Lauer AA, Griebsch LV, Pilz SM, et al. Impact of Vitamin D(3) Deficiency on Phosphatidylcholine-/Ethanolamine, Plasmalogen-, Lyso-Phosphatidylcholine-/Ethanolamine, Carnitine- and Triacyl Glyceride-Homeostasis in Neuroblastoma Cells and Murine Brain. Biomolecules. 2021 Nov 15;11(11):1699. https://doi.org/10.3390/biom11111699. PMID: 34827697

- Liu HM, Chu M, Liu CF, et al. Analysis of Serum Vitamin D Level and Related Factors in Patients With Restless Legs Syndrome. Front Neurol. 2021 Dec 9;12:782565. https://doi.org/10.3389/fneur.2021.782565. eCollection 2021. PMID: 34956064

- Liu N, Zhang T, Ma L, et al. Vitamin D Receptor Gene Polymorphisms and Risk of Alzheimer Disease and Mild Cognitive Impairment: A Systematic Review and Meta-Analysis. Adv Nutr. 2021 Dec 1;12(6):2255-2264. https://doi.org/10.1093/advances/nmab074. PMID: 34167149

- Liu W, Zhou C, Wang Y, et al. Vitamin D Deficiency Is Associated with Disrupted Cholesterol Homeostasis in Patients with Mild Cognitive Impairment. J Nutr. 2021 Dec 3;151(12):3865-3873. https://doi.org/10.1093/jn/nxab296. PMID: 34510220

- LoPinto-Khoury C, Brennan L, Mintzer S. Impact of carbamazepine on vitamin D levels: A meta-analysis. Epilepsy Res. 2021 Dec;178:106829. https://doi.org/10.1016/j.eplepsyres.2021.106829. Epub 2021 Nov 26. PMID: 34847425

- Lv L, Zhang H, Tan X, et al. Assessing the Effects of Vitamin D on Neural Network Function in Patients With Parkinson's Disease by Measuring the Fraction Amplitude of Low-Frequency Fluctuation. Front Aging Neurosci. 2021 Dec 20;13:763947. https://doi.org/10.3389/fnagi.2021.763947. eCollection 2021. PMID: 34987377

- Mimpen M, Rolf L, Poelmans G, et al. Vitamin D related genetic polymorphisms affect serological response to high-dose vitamin D supplementation in multiple sclerosis. PLoS One. 2021 Dec 2;16(12):e0261097. https://doi.org/10.1371/journal.pone.0261097. eCollection 2021. PMID: 34855907

- Nakajima-Ohyama KC, Tansho K, Tanimukai H. An alarm on vitamin D therapy for Alzheimer's disease patients: a case with Alzheimer's disease whose symptoms were exacerbated under chronic use of eldecalcitol. Psychogeriatrics. 2022 Jan;22(1):145-148. https://doi.org/10.1111/psyg.12786. Epub 2021 Nov 10. PMID: 34761480

- Pinzon RT, Wijaya VO, Veronica V. The Benefits of Add-on Therapy of Vitamin D 5000 IU to the Vitamin D Levels and Symptoms in Diabetic Neuropathy Patients: A Randomized Clinical Trial. J Pain Res. 2021 Dec 19;14:3865-3875. https://doi.org/10.2147/JPR.S341862. eCollection 2021. PMID: 34984028

- Rad RE, Zarbakhsh M, Sarabi S. The relationship of vitamin D deficiency with severity and outcome of acute stroke. Rom J Intern Med. 2021 Nov 20;59(4):351-358. https://doi.org/10.2478/rjim-2021-0013. Print 2021 Dec 1. PMID: 33855844

- Saadatmand K, Khan S, Hassan Q, et al. Benefits of vitamin D supplementation to attenuate TBI secondary injury? Transl Neurosci. 2021 Dec 15;12(1):533-544. https://doi.org/10.1515/tnsci-2020-0195. eCollection 2021 Jan 1. PMID: 34992852

- Santangelo G, Raimo S, Erro R, et al. Vitamin D as a possible biomarker of mild cognitive impairment in parkinsonians. Aging Ment Health. 2021 Nov;25(11):1998-2002. https://doi.org/10.1080/13607863.2020.1839860. Epub 2020 Oct 28. PMID: 33111573

- Sedaghat K, Naderian R, Pakdel R, et al. Regulatory effect of vitamin D on pro-inflammatory cytokines and anti-oxidative enzymes dysregulations due to chronic mild stress in the rat hippocampus and prefrontal cortical area. Mol Biol Rep. 2021 Dec;48(12):7865-7873. https://doi.org/10.1007/s11033-021-06810-2. Epub 2021 Oct 12. PMID: 34642830

- Seetan K, Albashir S, Jarrar B, et al. Assessment of Serum Vitamin D Levels in the serum of Patients with Postherpetic neuralgia and its correlation to pain severity: A cross-sectional comparative study. Int J Clin Pract. 2021 Nov;75(11):e14750. https://doi.org/10.1111/ijcp.14750. Epub 2021 Aug 29. PMID: 34431183

- Sun D, Mo X, Lv Y, et al. Reply to Response letter to the editor: Associations of vitamin D deficiency with MRI markers of brain health in a community sample. Clin Nutr. 2022 Feb;41(2):579-580. https://doi.org/10.1016/j.clnu.2021.12.025. Epub 2021 Dec 18. PMID: 35000770

- Sun S, Liu C, Jia Y, et al. Association Between Migraine Complicated With Restless Legs Syndrome and Vitamin D. Front Neurol. 2021 Nov 15;12:777721. https://doi.org/10.3389/fneur.2021.777721. eCollection 2021. PMID: 34867766

- Tiller C, Black LJ, Ponsonby AL, et al. Vitamin D metabolites and risk of first clinical diagnosis of central nervous system demyelination. J Steroid Biochem Mol Biol. 2022 Jan 11;218:106060. https://doi.org/10.1016/j.jsbmb.2022.106060. Online ahead of print. PMID: 35031430

- Torrisi M, Bonanno L, Formica C, et al. The role of rehabilitation and vitamin D supplementation on motor and psychological outcomes in poststroke patients. Medicine (Baltimore). 2021 Nov 12;100(45):e27747. https://doi.org/10.1097/MD.0000000000027747. PMID: 34766589

- Virgilio E, Vecchio D, Crespi I, et al. Serum Vitamin D as a Marker of Impaired Information Processing Speed and Early Disability in Multiple Sclerosis Patients. Brain Sci. 2021 Nov 17;11(11):1521. https://doi.org/10.3390/brainsci11111521. PMID: 34827520

- Wang L, Zhao XM, Wang FY, et al. Effect of Vitamin D Supplementation on the Prognosis of Post-stroke Fatigue: A Retrospective Cohort Study. Front Neurol. 2021 Nov 5;12:690969. https://doi.org/10.3389/fneur.2021.690969. eCollection 2021. PMID: 34803866

- Zhao Y, Xu J, Feng Z, et al. Impact of 25-Hydroxy Vitamin D on White Matter Hyperintensity in Elderly Patients: A Systematic Review and Meta-Analysis. Front Neurol. 2022 Jan 14;12:721427. https://doi.org/10.3389/fneur.2021.721427. eCollection 2021. PMID: 35095709

OBSTETRICS GYNECOLOGY

- Adán Lanceta V, Martín Ruiz N, Benito Costey S, et al. A neonatal hypocalcemia due to maternal vitamin D deficiency. Reviewing supplementation. An Pediatr (Engl Ed). 2022 Jan 4:S2341-2879(21)00212-X. https://doi.org/10.1016/j.anpede.2020.09.015. Online ahead of print. PMID: 34992004

- Aghaei F, Heidarnia A, Allahverdipour H, et al. Knowledge, attitude, performance, and determinant factors of Vitamin D deficiency prevention behaviours among Iranian pregnant women. Arch Public Health. 2021 Dec 10;79(1):224. https://doi.org/10.1186/s13690-021-00712-2. PMID: 34893075

- Agüero-Domenech N, Jover S, Sarrión A, et al. Vitamin D Deficiency and Gestational Diabetes Mellitus in Relation to Body Mass Index. Nutrients. 2021 Dec 27;14(1):102. https://doi.org/10.3390/nu14010102. PMID: 35010982

- Ali A, Alexander S, Ko P, et al. Developmental Vitamin D Deficiency in Pregnant Rats Does Not Induce Preeclampsia. Nutrients. 2021 Nov 26;13(12):4254. https://doi.org/10.3390/nu13124254. PMID: 34959804

- Amegah AK, Sewor C, Obeng AA, et al. Vitamin D intake modifies the association of household air pollution exposure with maternal disorders of pregnancy. Indoor Air. 2022 Jan;32(1):e12963. https://doi.org/10.1111/ina.12963. Epub 2021 Nov 27. PMID: 34837417

- Arabnezhad L, Mohammadifard M, Rahmani L, et al. Effects of curcumin supplementation on vitamin D levels in women with premenstrual syndrome and dysmenorrhea: a randomized controlled study. BMC Complement Med Ther. 2022 Jan 22;22(1):19. https://doi.org/10.1186/s12906-022-03515-2. PMID: 35065636

- Ashour H, Gamal SM, Sadek NB, et al. Vitamin D Supplementation Improves Uterine Receptivity in a Rat Model of Vitamin D Deficiency: A Possible Role of HOXA-10/FKBP52 Axis. Front Physiol. 2021 Nov 25;12:744548. https://doi.org/10.3389/fphys.2021.744548. eCollection 2021. PMID: 34899377

- Best CM, Sherwood R, Novotny JA, et al. Vitamin D kinetics in nonpregnant and pregnant women after a single oral dose of trideuterated vitamin D(3). J Steroid Biochem Mol Biol. 2022 Feb;216:106034. https://doi.org/10.1016/j.jsbmb.2021.106034. Epub 2021 Nov 26. PMID: 34843870 Clinical Trial.

- Brustad N, Chawes BL, Thorsen J, et al. High-dose vitamin D supplementation in pregnancy and 25(OH)D sufficiency in childhood reduce the risk of fractures and improve bone mineralization in childhood: Follow-up of a randomized clinical trial. EClinicalMedicine. 2021 Dec 24;43:101254. https://doi.org/10.1016/j.eclinm.2021.101254. eCollection 2022 Jan. PMID: 35005585

- Butler AE, Moin ASM, Sathyapalan T, et al. Vitamin D association with the renin angiotensin system in polycystic ovary syndrome. J Steroid Biochem Mol Biol. 2021 Nov;214:105965. https://doi.org/10.1016/j.jsbmb.2021.105965. Epub 2021 Oct 5. PMID: 34619249

- Chu TW, Jhao JY, Lin TJ, et al. Vitamin D in gynecological diseases. J Chin Med Assoc. 2021 Nov 1;84(11):1054-

1059. https://doi.org/10.1097/JCMA.0000000000000607. PMID: 34747902

- Curtis EM, Parsons C, Maslin K, et al. Bone turnover in pregnancy, measured by urinary CTX, is influenced by vitamin D supplementation and is associated with maternal bone health: findings from the Maternal Vitamin D Osteoporosis Study (MAVIDOS) trial. Am J Clin Nutr. 2021 Nov 8;114(5):1600-1611. https://doi.org/10.1093/ajcn/nqab264. PMID: 34297067 Clinical Trial.
- D'Ippolito S, Capozzi A, Scambia G, et al. Glucose/insulin metabolism and vitamin D in women with recurrent pregnancy loss. Am J Reprod Immunol. 2022 Jan;87(1):e13505. https://doi.org/10.1111/aji.13505. Epub 2021 Nov 10. PMID: 34687115
- Ding R, Li J, Zhang Q, et al. Vitamin D(3) protects intrauterine growth restriction induced by cooking oil fume derived fine particulate matters. Ecotoxicol Environ Saf. 2022 Jan 1;229:113103. https://doi.org/10.1016/j.ecoenv.2021.113103. Epub 2021 Dec 17. PMID: 34929501
- Grandi G, Del Savio MC, Melotti C, et al. Vitamin D and green tea extracts for the treatment of uterine fibroids in late reproductive life: a pilot, prospective, daily-diary based study. Gynecol Endocrinol. 2022 Jan;38(1):63-67. https://doi.org/10.1080/09513590.2021.1991909. Epub 2021 Oct 16. PMID: 34658291
- Güngör K, Güngör ND, Başar MM, et al. Relationship between serum vitamin D levels semen parameters and sperm DNA damage in men with unexplained infertility. Eur Rev Med Pharmacol Sci. 2022 Jan;26(2):499-505. https://doi.org/10.26355/eurrev_202201_27875. PMID: 35113426
- Hajianfar H, Karimi E, Mollaghasemi N, et al. Is there a relationship between serum vitamin D and semen parameters? A cross-sectional sample of the Iranian infertile men. Basic Clin Androl. 2021 Dec 2;31(1):29. https://doi.org/10.1186/s12610-021-00147-3. PMID: 34852757
- Hu B, Dong Y, Wang G, et al. Commentary on "The association between serum vitamin D, fertility and semen quality: A systematic review and meta-analysis" [Int. J. Surg. 71 (2019) 101-109]. Int J Surg. 2021 Nov;95:106044. https://doi.org/10.1016/j.ijsu.2021.106044. Epub 2021 Aug 3. PMID: 34352416
- Jafari M, Khodaverdi S, Sadri M, et al. Association Between Vitamin D Receptor (VDR) and Vitamin D Binding Protein (VDBP) Genes Polymorphisms to Endometriosis Susceptibility in Iranian Women. Reprod Sci. 2021 Dec;28(12):3491-3497. https://doi.org/10.1007/s43032-021-00598-z. Epub 2021 May 4. PMID: 33948927
- Karras SN, Dursun E, Alaylıoglu M, et al. Upregulation of Irisin and Vitamin D-Binding Protein Concentrations by Increasing Maternal 25-Hydrovitamin D Concentrations in Combination with Specific Genotypes of Vitamin D-Binding Protein Polymorphisms. Nutrients. 2021 Dec 26;14(1):90. https://doi.org/10.3390/nu14010090. PMID: 35010965
- Ko JKY, Shi J, Li RHW, et al. Effect of serum vitamin D level before ovarian stimulation on the cumulative live birth rate of women undergoing in vitro fertilization: a retrospective analysis. Endocr Connect. 2022 Jan 1:EC-21-0444.R1. https://doi.org/10.1530/EC-21-0444. Online ahead of print. PMID: 35029541
- Koyucu RG, Özcan T. Effect of intrapartum vitamin D levels on labor pain. J Obstet Gynaecol Res. 2021 Nov;47(11):3857-3866. https://doi.org/10.1111/jog.14960. Epub 2021 Aug 9. PMID: 34374177
- Levy B, O'Callaghan KM, Qamar H, et al. Basal Vitamin D Status and Supplement Dose Are Primary Contributors to Maternal 25-Hydroxyvitamin D Response to Prenatal and Postpartum Cholecalciferol Supplementation. J Nutr. 2021 Nov 2;151(11):3361-3378. https://doi.org/10.1093/jn/nxab265. PMID: 34302350
- Lima MS, Pereira M, Castro CT, et al. Vitamin D deficiency and anemia in pregnant women: a systematic review and meta-analysis. Nutr Rev. 2021 Dec 30:nuab114. https://doi.org/10.1093/nutrit/nuab114. Online ahead of print. PMID: 34969067
- Lin S, Zhang Y, Jiang L, et al. Interactive Effects of Maternal Vitamin D Status and Socio-Economic Status on the Risk of Spontaneous Abortion: Evidence from Henan Province, China. Nutrients. 2022 Jan 11;14(2):291. https://doi.org/10.3390/nu14020291. PMID: 35057472
- Luo C, Sun Y, Zeng Z, et al. Vitamin D supplementation in pregnant women or infants for preventing allergic diseases: a systematic review and meta-analysis of randomized controlled trials. Chin Med J (Engl). 2022 Jan 12;135(3):276-284. https://doi.org/10.1097/CM9.0000000000001951. PMID: 35108226
- Mahendra A, Fall CHD. Maternal vitamin D deficiency and GDM risk: evidence for the case of investing more attention in antenatal clinics. Proc Nutr Soc. 2021 Dec 20:1-7. https://doi.org/10.1017/S0029665121003840. Online ahead of print. PMID: 34924035 Review.
- Ma J, Han L, Zhou X, et al. Clinical significance of Vitamin-D and other bone turnover markers on bone mineral density in patients with gestational diabetes mellitus. Pak J Med Sci. 2022 Jan-Feb;38(1):23-27. https://doi.org/10.12669/pjms.38.1.4461. PMID: 35035395
- Mokhtari E, Rouhani P, Saneei P. Comments on: "Vitamin D, preeclampsia and prematurity: A systematic review and meta-analysis of observational and interventional studies". Midwifery. 2021 Dec;103:103168. https://doi.org/10.1016/j.midw.2021.103168. Epub 2021 Oct 20. PMID: 34711433
- Mo M, Shao B, Xin X, et al. The Association of Gene Variants in the Vitamin D Metabolic Pathway and Its Interaction with Vitamin D on Gestational Diabetes Mellitus: A Prospective Cohort Study. Nutrients. 2021 Nov 24;13(12):4220. https://doi.org/10.3390/nu13124220. PMID: 34959770
- Nema J, Randhir K, Wadhwani N, et al. Maternal vitamin D deficiency reduces docosahexaenoic acid, placental growth factor and peroxisome proliferator activated receptor gamma levels in the pup brain in a rat model of preeclampsia. Prostaglandins Leukot Essent Fatty Acids. 2021 Dec;175:102364. https://doi.org/10.1016/j.plefa.2021.102364. Epub 2021 Nov 4. PMID: 34768025
- Nunes PR, Romao-Veiga M, Matias ML, et al. Vitamin D decreases expression of NLRP1 and NLRP3 inflammasomes in placental explants from women with preeclampsia cultured with hydrogen peroxide. Hum Immunol. 2022 Jan;83(1):74-80. https://doi.org/10.1016/j.humimm.2021.10.002. Epub 2021 Oct 23. PMID: 34696918
- Nunes PR, Romao-Veiga M, Ribeiro VR,

et al. Vitamin D decreases cell death and inflammation in human umbilical vein endothelial cells and placental explants from pregnant women with preeclampsia cultured with TNF-alpha. Immunol Invest. 2021 Dec 22:1-17. https://doi.org/10.1080/08820139.2021.2017452. Online ahead of print. PMID: 34937520

- O' Callaghan KM, Shanta SS, Fariha F, et al. Effect of maternal prenatal and postpartum vitamin D supplementation on offspring bone mass and muscle strength in early childhood: follow-up of a randomized controlled trial. Am J Clin Nutr. 2021 Nov 27:nqab396. https://doi.org/10.1093/ajcn/nqab396. Online ahead of print. PMID: 34849536

- Palacios C, Trak-Fellermeier MA, Melendez M, et al. Associations between vitamin D levels and glucose metabolism markers among pregnant women and their infants in Puerto Rico. Nutr Hosp. 2021 Dec 9;38(6):1224-1231. https://doi.org/10.20960/nh.03600. PMID: 34645272

- Ramot R, Yadav S, Vishnoi SK, et al. Effect of Maternal Supplementation with Two Different Doses of Vitamin D During Lactation on Vitamin D Status, Anthropometry and Bone Mass of Infants: A Randomized Controlled Trial. Indian Pediatr. 2022 Jan 9:S097475591600396. Online ahead of print. PMID: 35014613

- Rasheedy R, Sammour H, Elkholy A, et al. Editorial Expression of Concern: The efficacy of vitamin D combined with clomiphene citrate in ovulation induction in overweight women with polycystic ovary syndrome: a double blind, randomized clinical trial. Endocrine. 2022 Jan;75(1):315. https://doi.org/10.1007/s12020-021-02946-0. PMID: 34860351

- Rezayat AA, Asadpour AA, Yarahmadi A, et al. Association Between Serum Vitamin D Concentration with Spermiogram Parameters and Reproductive Hormones Among Infertile Iranian Males: a Cross-sectional Study. Reprod Sci. 2022 Jan;29(1):270-276. https://doi.org/10.1007/s43032-021-00771-4. Epub 2021 Nov 11. PMID: 34766260

- Ribeiro VR, Romao-Veiga M, Nunes PR, et al. Immunomodulatory effect of vitamin D on the STATs and transcription factors of CD4(+) T cell subsets in pregnant women with preeclampsia. Clin Immunol. 2022 Jan;234:108917. https://doi.org/10.1016/j.clim.2021.108917. Epub 2021 Dec 29. PMID: 34973430

- Ribeiro VR, Romao-Veiga M, Nunes PR, et al. Vitamin D modulates the transcription factors of T cell subsets to anti-inflammatory and regulatory profiles in preeclampsia. Int Immunopharmacol. 2021 Dec;101(Pt B):108366. https://doi.org/10.1016/j.intimp.2021.108366. Epub 2021 Nov 20. PMID: 34810124

- Seifer DB, Lambert-Messerlian G, Palomaki GE, et al. Preeclampsia at delivery is associated with lower serum vitamin D and higher antiangiogenic factors: a case control study. Reprod Biol Endocrinol. 2022 Jan 6;20(1):8. https://doi.org/10.1186/s12958-021-00885-z. PMID: 34991614

- Sert ZS, Yılmaz SA, Seçilmiş Ö, et al. Effect of calcium and vitamin D supplementation on the clinical, hormonal, and metabolic profile in non-obese women with polycystic ovary syndrome. Ir J Med Sci. 2022 Jan 28. https://doi.org/10.1007/s11845-021-02899-3. Online ahead of print. PMID: 35088227

- Singh V, Tamar N, Lone Z, et al. Association between serum 25-hydroxy vitamin D level and menstrual cycle length and regularity: A cross-sectional observational study. Int J Reprod Biomed. 2021 Dec 13;19(11):979-986. https://doi.org/10.18502/ijrm.v19i11.9913. eCollection 2021 Nov. PMID: 34977455

- Skowrońska P, Kunicki M, Pastuszek E, et al. Vitamin D and anti-Mullerian hormone concentration in human follicular fluid individually aspirated from all patient follicles. Gynecol Endocrinol. 2022 Jan;38(1):28-32. https://doi.org/10.1080/09513590.2021.1933934. Epub 2021 May 28. PMID: 34044669

- Sourander A, Upadhyaya S, Surcel HM, et al. Maternal Vitamin D Levels During Pregnancy and Offspring Autism Spectrum Disorder. Biol Psychiatry. 2021 Dec 1;90(11):790-797. https://doi.org/10.1016/j.biopsych.2021.07.012. Epub 2021 Jul 21. PMID: 34602240

- Stenhouse C, Suva LJ, Gaddy D, et al. Phosphate, Calcium, and Vitamin D: Key Regulators of Fetal and Placental Development in Mammals. Adv Exp Med Biol. 2022;1354:77-107. https://doi.org/10.1007/978-3-030-85686-1_5. PMID: 34807438 Review.

- Tafti FD, Zare F, Miresmaeili SM, et al. Evaluating Vitamin D and foxp3 mRNA levels in women with recurrent spontaneous abortion. JBRA Assist Reprod. 2021 Nov 23. https://doi.org/10.5935/1518-0557.20210062. Online ahead of print. PMID: 34812598

- Vahdat M, Allahqoli L, Mirzaei H, et al. The effect of vitamin D on recurrence of uterine fibroids: A randomized, double-blind, placebo-controlled pilot study. Complement Ther Clin Pract. 2022 Jan 24;46:101536. https://doi.org/10.1016/j.ctcp.2022.101536. Online ahead of print. PMID: 35092948

- Wan T, Sun H, Mao Z, et al. Vitamin D deficiency inhibits microRNA-196b-5p which regulates ovarian granulosa cell hormone synthesis, proliferation, and apoptosis by targeting RDX and LRRC17. Ann Transl Med. 2021 Dec;9(24):1775. https://doi.org/10.21037/atm-21-6081. PMID: 35071469

- Wierzejska RE, Wojda BK. Vitamin D Status during Pregnancy versus the Anthropometric Parameters of Two- and Four-Year-Olds: A Pilot Study. Nutrients. 2022 Jan 7;14(2):254. https://doi.org/10.3390/nu14020254. PMID: 35057435

- Yanachkova V, Staynova R, Stoev S, et al. Benefits of using a microencapsulated vitamin D delivery system in women with polycystic ovary syndrome. Eur J Hosp Pharm. 2021 Dec 1:ejhpharm-2021-002967. https://doi.org/10.1136/ejhpharm-2021-002967. Online ahead of print. PMID: 34853015

- Zhang J, Xing C, Zhao H, et al. The effectiveness of coenzyme Q10, vitamin E, inositols, and vitamin D in improving the endocrine and metabolic profiles in women with polycystic ovary syndrome: a network Meta-analysis. Gynecol Endocrinol. 2021 Dec;37(12):1063-1071. https://doi.org/10.1080/09513590.2021.1926975. Epub 2021 May 14. PMID: 33988478

- Zhang T. Comment on: Maternal vitamin D status and risk of gestational diabetes mellitus: A systematic review and meta-analysis of prospective cohort studies. Clin Nutr. 2021 Dec;40(12):5751-5752. https://doi.org/10.1016/j.clnu.2021.10.016. Epub 2021 Oct 29. PMID: 34763259

- Zhao R, Zhou L, Wang S, et al. Association between maternal vitamin D levels and risk of adverse pregnancy outcomes: a system-

atic review and dose-response meta-analysis. Food Funct. 2022 Jan 4;13(1):14-37. https://doi.org/10.1039/d1fo03033g. PMID: 34859252 Review.

ONCOLOGY

- Bajbouj K, Sahnoon L, Shafarin J, et al. Vitamin D-Mediated Anti-cancer Activity Involves Iron Homeostatic Balance Disruption and Oxidative Stress Induction in Breast Cancer. Front Cell Dev Biol. 2021 Nov 8;9:766978. https://doi.org/10.3389/fcell.2021.766978. eCollection 2021. PMID: 34820382

- Barber LE, Bertrand KA, Petrick JL, et al. Predicted Vitamin D Status and Colorectal Cancer Incidence in the Black Women's Health Study. Cancer Epidemiol Biomarkers Prev. 2021 Dec;30(12):2334-2341. https://doi.org/10.1158/1055-9965.EPI-21-0675. Epub 2021 Oct 7. PMID: 34620630

- Chartron E, Firmin N, Touraine C, et al. A Phase II Multicenter Trial on High-Dose Vitamin D Supplementation for the Correction of Vitamin D Insufficiency in Patients with Breast Cancer Receiving Adjuvant Chemotherapy. Nutrients. 2021 Dec 10;13(12):4429. https://doi.org/10.3390/nu13124429. PMID: 34959982

- Chen LW, Chang LC, Hua CC, et al. Comparing the Expressions of Vitamin D Receptor, Cell Proliferation, and Apoptosis in Gastric Mucosa With Gastritis, Intestinal Metaplasia, or Adenocarcinoma Change. Front Med (Lausanne). 2021 Nov 22;8:766061. https://doi.org/10.3389/fmed.2021.766061. eCollection 2021. PMID: 34881266

- De Silva WGM, Han JZR, Yang C, et al. Evidence for Involvement of Nonclassical Pathways in the Protection From UV-Induced DNA Damage by Vitamin D-Related Compounds. JBMR Plus. 2021 Sep 29;5(12):e10555. https://doi.org/10.1002/jbm4.10555. eCollection 2021 Dec. PMID: 34950826

- Fang Y, Song H, Huang J, et al. The clinical significance of vitamin D levels and vitamin D receptor mRNA expression in colorectal neoplasms. J Clin Lab Anal. 2021 Nov;35(11):e23988. https://doi.org/10.1002/jcla.23988. Epub 2021 Oct 15. PMID: 34651346

- Goto RL, Tablas MB, Prata GB, et al. Vitamin D(3) supplementation alleviates chemically-induced cirrhosis-associated hepatocarcinogenesis. J Steroid Biochem Mol Biol. 2022 Jan;215:106022. https://doi.org/10.1016/j.jsbmb.2021.106022. Epub 2021 Nov 10. PMID: 34774723

- Gumus R, Capik O, Gundogdu B, et al. Low vitamin D and high cholesterol facilitate oral carcinogenesis in 4NQO-induced rat models via regulating glycolysis. Oral Dis. 2021 Dec 26. https://doi.org/10.1111/odi.14117. Online ahead of print. PMID: 34954855

- Hazem RM, Antar SA, Nafea YK, et al. Pirfenidone and vitamin D mitigate renal fibrosis induced by doxorubicin in mice with Ehrlich solid tumor. Life Sci. 2022 Jan 1;288:120185. https://doi.org/10.1016/j.lfs.2021.120185. Epub 2021 Nov 30. PMID: 34861286

- Hernández-Alonso P, Canudas S, Boughanem H, et al. Dietary vitamin D intake and colorectal cancer risk: a longitudinal approach within the PREDIMED study. Eur J Nutr. 2021 Dec;60(8):4367-4378. https://doi.org/10.1007/s00394-021-02585-1. Epub 2021 May 28. PMID: 34050394

- He Y, Zhang X, Timofeeva M, et al. Bidirectional Mendelian randomisation analysis of the relationship between circulating vitamin D concentration and colorectal cancer risk. Int J Cancer. 2022 Jan 15;150(2):303-307. https://doi.org/10.1002/ijc.33779. Epub 2021 Sep 6. PMID: 34449871

- Joob B, Wiwanitkit V. Vitamin D receptor gene polymorphism and ocular surface squamous cell neoplasms. Eur J Ophthalmol. 2022 Jan;32(1):NP291. https://doi.org/10.1177/1120672119895965. Epub 2019 Dec 17. PMID: 31847581

- Kazemian E, Akbari ME, Moradi N, et al. Assessment the effect of vitamin D supplementation on plasma vitamin D levels, inflammation, and oxidative stress biomarkers based on vitamin D receptor genetic variation in breast cancer survivors: a protocol for clinical trial. J Health Popul Nutr. 2021 Nov 2;40(1):46. https://doi.org/10.1186/s41043-021-00272-9. PMID: 34727991

- Kazemi SM, Esmaieli-Bandboni A, Veisi Malekshahi Z, et al. Vitamin D receptor gene polymorphisms and risk of breast cancer in Iranian women. Ann Med Surg (Lond). 2021 Dec 4;73:103150. https://doi.org/10.1016/j.amsu.2021.103150. eCollection 2022 Jan. PMID: 34917354

- Linowiecka K, Wolnicka-Głubisz A, Brożyna AA. Vitamin D endocrine system in breast cancer. Acta Biochim Pol. 2021 Nov 15;68(4):489-497. https://doi.org/10.18388/abp.2020_5961. PMID: 34851599

- Li Q, Li Y, Jiang H, et al. Vitamin D suppressed gastric cancer cell growth through downregulating CD44 expression in vitro and in vivo. Nutrition. 2021 Nov-Dec;91-92:111413. https://doi.org/10.1016/j.nut.2021.111413. Epub 2021 Jul 15. PMID: 34450383

- Liu J, Shen J, Mu C, et al. High-dose vitamin D metabolite delivery inhibits breast cancer metastasis. Bioeng Transl Med. 2021 Oct 27;7(1):e10263. https://doi.org/10.1002/btm2.10263. eCollection 2022 Jan. PMID: 35111955

- Mansoor H, Waqar E, Tariq R. Prevalence of vitamin D deficiency in Pakistani females and its link to breast cancer. J Pak Med Assoc. 2022 Jan;72(1):202. https://doi.org/10.47391/JPMA.11-4169. PMID: 35099474

- Martin-Gorgojo A, Gilaberte Y, Nagore E. Vitamin D and Skin Cancer: An Epidemiological, Patient-Centered Update and Review. Nutrients. 2021 Nov 28;13(12):4292. https://doi.org/10.3390/nu13124292. PMID: 34959844

- Mehaoudi RI, Adane S, Sadouki M, et al. Association of vitamin D deficiency and insulin resistance with breast cancer in premenopausal Algerian women: A cross-sectional study. Ann Endocrinol (Paris). 2021 Dec;82(6):597-605. https://doi.org/10.1016/j.ando.2021.05.002. Epub 2021 Jun 21. PMID: 34166649

- Migliaccio S, Di Nisio A, Magno S, et al. Vitamin D deficiency: a potential risk factor for cancer in obesity? Int J Obes (Lond). 2022 Jan 14. https://doi.org/10.1038/s41366-021-01045-4. Online ahead of print. PMID: 35027681 Review.

- Niedermaier T, Gredner T, Kuznia S, et al. Potential of Vitamin D Food Fortification in Prevention of Cancer Deaths-A Modeling Study. Nutrients. 2021 Nov 9;13(11):3986. https://doi.org/10.3390/nu13113986. PMID: 34836241

- O'Brien KM, Keil AP, Harmon QE, et al. Vitamin D Supplement Use and Risk of Breast Cancer by Race-Ethnicity. Epidemiology. 2022 Jan 1;33(1):37-47. https://doi.org/10.1097/EDE.0000000000001413. PMID: 34847083
- Olabiyi AA, Passos DF, da Silva JLG, et al. Role of purinergic system and vitamin D in the anti-cancer immune response. Life Sci. 2021 Dec 15;287:120110. https://doi.org/10.1016/j.lfs.2021.120110. Epub 2021 Oct 29. PMID: 34743945 Review.
- Ozmen V, Ordu C, Ilgun AS, et al. The effects of vitamin D replacement on pathological complete response (pCR) in breast cancer patients receiving neoadjuvant systemic chemotherapy (NAC). Breast J. 2021 Dec;27(12):902-905. https://doi.org/10.1111/tbj.14299. Epub 2021 Nov 21. PMID: 34806247
- Palamar M, Onay H. Vitamin D receptor gene polymorphism and ocular surface squamous cell neoplasms. Eur J Ophthalmol. 2022 Jan;32(1):NP342. https://doi.org/10.1177/11206721211032519. Epub 2021 Jul 16. PMID: 34269094
- Piatek K, Kutner A, Cacsire Castillo-Tong D, et al. Vitamin D Analogs Regulate the Vitamin D System and Cell Viability in Ovarian Cancer Cells. Int J Mol Sci. 2021 Dec 24;23(1):172. https://doi.org/10.3390/ijms23010172. PMID: 35008598
- Piotrowska A, Beserra FP, Wierzbicka JM, et al. Vitamin D Enhances Anticancer Properties of Cediranib, a VEGFR Inhibitor, by Modulation of VEGFR2 Expression in Melanoma Cells. Front Oncol. 2021 Dec 24;11:763895. https://doi.org/10.3389/fonc.2021.763895. eCollection 2021. PMID: 35004285
- Quigley M, Rieger S, Capobianco E, et al. Vitamin D Modulation of Mitochondrial Oxidative Metabolism and mTOR Enforces Stress Adaptations and Anticancer Responses. JBMR Plus. 2021 Dec 1;6(1):e10572. https://doi.org/10.1002/jbm4.10572. eCollection 2022 Jan. PMID: 35079680
- Rasmussen LS, Yilmaz MK, Falkmer UG, et al. Response to the letter entitled: Re: Pre-treatment serum vitamin D deficiency is associated with increased inflammatory biomarkers and short overall survival in patients with pancreatic cancer: Analysis of the prognostic effect of serum vitamin D on pancreatic cancer: Several confounders. Eur J Cancer. 2021 Nov;158:248-250. https://doi.org/10.1016/j.ejca.2021.09.009. Epub 2021 Oct 9. PMID: 34642028
- Shariev A, Painter N, Reeve VE, et al. PTEN: A novel target for vitamin D in melanoma. J Steroid Biochem Mol Biol. 2022 Jan 13;218:106059. https://doi.org/10.1016/j.jsbmb.2022.106059. Online ahead of print. PMID: 35033661
- Shliakhtsitsava K, Fisher ES, Trovillion EM, et al. Improving vitamin D testing and supplementation in children with newly diagnosed cancer: A quality improvement initiative at Rady Children's Hospital San Diego. Pediatr Blood Cancer. 2021 Nov;68(11):e29217. https://doi.org/10.1002/pbc.29217. Epub 2021 Jul 19. PMID: 34286891
- Tokunaga E, Masuda T, Ijichi H, et al. Impact of serum vitamin D on the response and prognosis in breast cancer patients treated with neoadjuvant chemotherapy. Breast Cancer. 2022 Jan;29(1):156-163. https://doi.org/10.1007/s12282-021-01292-3. Epub 2021 Sep 6. PMID: 34487328
- Vanhevel J, Verlinden L, Doms S, et al. The role of vitamin D in breast cancer risk and progression. Endocr Relat Cancer. 2022 Jan 24;29(2):R33-R55. https://doi.org/10.1530/ERC-21-0182. PMID: 34935629 Review.
- Vaughan-Shaw PG, Blackmur JP, Grimes G, et al. Vitamin D treatment induces in vitro and ex vivo transcriptomic changes indicating anti-tumor effects. FASEB J. 2022 Jan;36(1):e22082. https://doi.org/10.1096/fj.202101430RR. PMID: 34918389
- Welsh J. Vitamin D and Breast Cancer: Mechanistic Update. JBMR Plus. 2021 Dec 10;5(12):e10582. https://doi.org/10.1002/jbm4.10582. eCollection 2021 Dec. PMID: 34950835
- Yilmaz E, Azizoglu ZB, Aslan K, et al. Therapeutic effects of vitamin D and IL-22 on methotrexate-induced mucositis in mice. Anticancer Drugs. 2022 Jan 1;33(1):11-18. https://doi.org/10.1097/CAD.0000000000001128. PMID: 34348356
- Zhai LL, He YR, Ju TF, et al. Letter re: Pre-treatment serum vitamin D deficiency is associated with increased inflammatory biomarkers and short overall survival in patients with pancreatic cancer: Analysis of the prognostic effect of serum vitamin D on pancreatic cancer: Several confounders. Eur J Cancer. 2021 Nov;158:246-247. https://doi.org/10.1016/j.ejca.2021.09.006. Epub 2021 Oct 19. PMID: 34654616
- Zhang Y, Zheng W, Huang Y, et al. Vitamin D Insufficiency Predicts Susceptibility of Parathyroid Hormone Reduction after Total Thyroidectomy in Thyroid Cancer Patients. Int J Endocrinol. 2021 Dec 15;2021:8657918. https://doi.org/10.1155/2021/8657918. eCollection 2021. PMID: 34956363

PEDIATRICS

- Abdelmaksoud SR, Mostafa MA, Khashaba RA, et al. Lower Vitamin D Level as a Risk Factor for Late Onset Neonatal Sepsis: An Observational Case-Control Study. Am J Perinatol. 2021 Nov 28. https://doi.org/10.1055/s-0041-1740074. Online ahead of print. PMID: 34839468
- Abrams SA. Vitamin D and bone minerals in neonates. Early Hum Dev. 2021 Nov;162:105461. https://doi.org/10.1016/j.earlhumdev.2021.105461. Epub 2021 Sep 2. PMID: 34489134
- Aksoy Aydemir G, Aydemir E, Asik A. Changes in Tear Meniscus Analysis of Children Who Have Type 1 Diabetes Mellitus, With and Without Vitamin D Deficiency. Cornea. 2021 Nov 23. https://doi.org/10.1097/ICO.0000000000002908. Online ahead of print. PMID: 34812782
- Aksoy Aydemir G, Yetkin E, Aydemir E, et al. Changes in the macular choroidal thickness of children who have type-1 diabetes mellitus, with and without vitamin D deficiency. Int Ophthalmol. 2022 Jan 28. https://doi.org/10.1007/s10792-021-02185-2. Online ahead of print. PMID: 35088355
- Allam HH, Shafie A, Gharib AF, et al. Effect of Application of Different Exercise Intensities on Vitamin D and Parathormone in Children with Down's Syndrome. Appl Bionics Biomech. 2021 Dec 7;2021:7424857. https://doi.org/10.1155/2021/7424857. eCollection 2021. PMID: 34917171
- Arshad F, Arundel P, Bishop N, et al.

Should we use weight-based vitamin D treatment in children? Arch Dis Child. 2021 Dec 30:archdischild-2021-322852. https://doi.org/10.1136/archdischild-2021-322852. Online ahead of print. PMID: 34969671

- Aydemir E, Ilhan C, Aksoy Aydemir G, et al. Evaluation of Retinal Structure in Pediatric Subjects With Vitamin D Deficiency. Am J Ophthalmol. 2022 Jan;233:30-37. https://doi.org/10.1016/j.ajo.2021.06.031. Epub 2021 Jul 17. PMID: 34283984
- Azak E, Cetin II. Low serum 25-Hydroxy (OH) vitamin D levels are associated with increased arterial stiffness in healthy children: An echocardiographic study from Turkey. Echocardiography. 2021 Nov;38(11):1941-1947. https://doi.org/10.1111/echo.15248. Epub 2021 Nov 9. PMID: 34755377
- Bahrami A, Farjami Z, Ferns GA, et al. Evaluation of the knowledge regarding vitamin D, and sunscreen use of female adolescents in Iran. BMC Public Health. 2021 Nov 10;21(1):2059. https://doi.org/10.1186/s12889-021-12133-5. PMID: 34758788
- Bhandari R, Aguayo-Hiraldo P, Malvar J, et al. Ultra-High Dose Vitamin D in Pediatric Hematopoietic Stem Cell Transplantation: A Nonrandomized Controlled Trial. Transplant Cell Ther. 2021 Dec;27(12):1001.e1-1001.e9. https://doi.org/10.1016/j.jtct.2021.08.030. Epub 2021 Sep 6. PMID: 34500127 Clinical Trial.
- Cayir A, Akyigit A, Gullu UU, et al. Clinical, biochemical, and echocardiographic evaluation of neonates with vitamin D deficiency due to maternal vitamin D deficiency. Cardiol Young. 2022 Jan;32(1):88-93. https://doi.org/10.1017/S1047951121001633. Epub 2021 May 4. PMID: 33941295
- Che D, Yu L, Guo Y, et al. Correlation between vitamin D levels and bone metabolism in children with cow's milk allergy. J Int Med Res. 2022 Jan;50(1):3000605211066071. https://doi.org/10.1177/03000605211066071. PMID: 34994215
- Clarke SL, Mitchell RE, Sharp GC, et al. Vitamin D levels and risk of juvenile idiopathic arthritis: A Mendelian randomization study. Arthritis Care Res (Hoboken). 2021 Nov 8. https://doi.org/10.1002/acr.24815. Online ahead of print. PMID: 34748291
- Dodamani MH, Sehemby M, Memon SS, et al. Genotype and phenotypic spectrum of vitamin D dependent rickets type 1A: our experience and systematic review. J Pediatr Endocrinol Metab. 2021 Sep 8;34(12):1505-1513. https://doi.org/10.1515/jpem-2021-0403. Print 2021 Dec 20. PMID: 34492747
- G A, Seth A, Kumar P, et al. Prevalence and management of vitamin D deficiency in children with newly diagnosed coeliac disease: cohort study. Paediatr Int Child Health. 2021 Nov 9:1-6. https://doi.org/10.1080/20469047.2021.1996089. Online ahead of print. PMID: 34752726
- Gallardo-Carrasco MC, Jiménez-Barbero JA, Bravo-Pastor MDM, et al. Serum Vitamin D, Folate and Fatty Acid Levels in Children with Autism Spectrum Disorders: A Systematic Review and Meta-Analysis. J Autism Dev Disord. 2021 Nov 3. https://doi.org/10.1007/s10803-021-05335-8. Online ahead of print. PMID: 34734376
- Gao YX, Zhang J, Man Q, et al. The association between vitamin D levels and metabolic syndrome components among metropolitan adolescent population. J Pediatr Endocrinol Metab. 2021 Nov 9;35(1):55-63. https://doi.org/10.1515/jpem-2021-0581. Print 2022 Jan 27. PMID: 34757705
- Ge H, Qiao Y, Ge J, et al. Effects of early vitamin D supplementation on the prevention of bronchopulmonary dysplasia in preterm infants. Pediatr Pulmonol. 2022 Jan 6. https://doi.org/10.1002/ppul.25813. Online ahead of print. PMID: 34989171
- Gharibeh N, Gallo S, Sotunde OF, et al. Patterns of Bone Mineral Accretion and Sex Differences in Healthy Term Vitamin D Replete and Breastfed Infants From Montreal, Canada: Bone Mass Reference Data. J Clin Densitom. 2022 Jan-Mar;25(1):43-53. https://doi.org/10.1016/j.jocd.2021.07.004. Epub 2021 Jul 24. PMID: 34479797
- Gharibeh N, Razaghi M, Vanstone CA, et al. Maternal Vitamin D Status and Gestational Weight Gain as Correlates of Neonatal Bone Mass in Healthy Term Breastfed Young Infants from Montreal, Canada. Nutrients. 2021 Nov 23;13(12):4189. https://doi.org/10.3390/nu13124189. PMID: 34959742
- Gupta P, Dabas A, Seth A, et al. Indian Academy of Pediatrics Revised (2021) Guidelines on Prevention and Treatment of Vitamin D Deficiency and Rickets. Indian Pediatr. 2021 Dec 29:S097475591600382. Online ahead of print. PMID: 34969941
- Gurevich E, Levi S, Borovitz Y, et al. Childhood Hypercalciuric Hypercalcemia With Elevated Vitamin D and Suppressed Parathyroid Hormone: Long-Term Follow Up. Front Pediatr. 2021 Nov 10;9:752312. https://doi.org/10.3389/fped.2021.752312. eCollection 2021. PMID: 34858904
- Gül İ, Gür E, Erener Ercan T, et al. The Effect of Vitamin D Prophylaxis on 25-OH Vitamin D Levels in Children. Turk Arch Pediatr. 2021 Nov;56(6):618-623. https://doi.org/10.5152/TurkArchPediatr.2021.21166. PMID: 35110062
- Haziroglu Okmen Z, Celiksoy MH, Topal E. The Effect of Serum Vitamin D Level on Allergic Rhinitis Symptoms in Children. Pediatr Allergy Immunol Pulmonol. 2021 Dec;34(4):132-140. https://doi.org/10.1089/ped.2021.0161. PMID: 34958245
- Heo JS, Ahn YM, Kim AE, et al. Breastfeeding and vitamin D. Clin Exp Pediatr. 2021 Dec 14. https://doi.org/10.3345/cep.2021.00444. Online ahead of print. PMID: 34902960
- Holmlund-Suila EM, Hauta-Alus HH, Enlund-Cerullo M, et al. Iron status in early childhood is modified by diet, sex and growth: Secondary analysis of a randomized controlled vitamin D trial. Clin Nutr. 2022 Feb;41(2):279-287. https://doi.org/10.1016/j.clnu.2021.12.013. Epub 2021 Dec 13. PMID: 34999321
- Hong J. A new perspective on cholesterol in pediatric health: Association of vitamin D metabolism, respiratory diseases, and mental health problems. Clin Exp Pediatr. 2021 Dec 9. https://doi.org/10.3345/cep.2020.00934. Online ahead of print. PMID: 34886593
- Horton-French K, Dunlop E, Lucas RM, et al. Prevalence and predictors of vitamin D deficiency in a nationally representative sample of Australian adolescents and young adults. Eur J Clin Nutr. 2021 Nov;75(11):1627-1636. https://doi.org/10.1038/s41430-021-00880-y. Epub 2021 Mar 1. PMID: 33649524
- Hurmuzlu Kozler S, Saylı TR. Factors influencing initiation and discontinuation of vitamin D supplementation among children

1-24-months-old. Curr Med Res Opin. 2021 Dec 10:1-7. https://doi.org/10.1080/03007995.2021.2010460. Online ahead of print. PMID: 34817302

- Joshi K, Bhowmik E, Singh N, et al. Vitamin D Status of School-Age Children in North India. Indian J Pediatr. 2022 Jan;89(1):71-73. https://doi.org/10.1007/s12098-021-03891-6. Epub 2021 Sep 30. PMID: 34591272
- Karacan Küçükali G, Gülbahar Ö, Özalkak Ş, et al. Is Bioavailable Vitamin D Better Than Total Vitamin D to Evaluate Vitamin D Status in Obese Children? J Clin Res Pediatr Endocrinol. 2021 Nov 25;13(4):391-399. https://doi.org/10.4274/jcrpe.galenos.2020.2021.0230. Epub 2021 May 20. PMID: 34013709
- Kerber AA, Pitlick MM, Kellund AE, et al. Stable Rates of Low Vitamin D Status Among Children Despite Increased Testing: A Population-Based Study. J Pediatr. 2021 Dec;239:212-218.e2. https://doi.org/10.1016/j.jpeds.2021.07.037. Epub 2021 Jul 20. PMID: 34293368
- Kittana M, Ahmadani A, Stojanovska L, et al. The Role of Vitamin D Supplementation in Children with Autism Spectrum Disorder: A Narrative Review. Nutrients. 2021 Dec 22;14(1):26. https://doi.org/10.3390/nu14010026. PMID: 35010901
- Klatka M, Partyka M, Polak A, et al. Vitamin D, calcium and phosphorus status in children with short stature - effect of growth hormone therapy. Ann Agric Environ Med. 2021 Dec 29;28(4):686-691. https://doi.org/10.26444/aaem/139569. Epub 2021 Jul 7. PMID: 34969230
- Kostara M, Giapros V, Serbis A, et al. Food allergy in children is associated with Vitamin D deficiency: A case-control study. Acta Paediatr. 2021 Dec 4. https://doi.org/10.1111/apa.16206. Online ahead of print. PMID: 34862826
- Lepus CA, Samela K, Emerick KM, et al. Vitamin D status in children with intestinal failure who have achieved enteral autonomy. Nutr Clin Pract. 2021 Dec;36(6):1284-1289. https://doi.org/10.1002/ncp.10685. Epub 2021 Jun 23. PMID: 34161622
- Lu T, Liang B, Jia Y, et al. Relationship between bronchopulmonary dysplasia, long-term lung function, and vitamin D level at birth in preterm infants. Transl Pediatr. 2021 Nov;10(11):3075-3081. https://doi.org/10.21037/tp-21-494. PMID: 34976773
- Mahan S, Ackerman K, DiFazio R, et al. Retrospective study of patterns of vitamin D testing and status at a single institution paediatric orthopaedics and sports clinics. BMJ Open. 2021 Dec 9;11(12):e047546. https://doi.org/10.1136/bmjopen-2020-047546. PMID: 34887268
- Mangas-Sánchez C, Garriga-García M, Serrano-Nieto MJ, et al. Vitamin D Status in Pediatric and Young Adult Cystic Fibrosis Patients. Are the New Recommendations Effective? Nutrients. 2021 Dec 9;13(12):4413. https://doi.org/10.3390/nu13124413. PMID: 34959965
- Martínez Redondo I, García Romero R, et al. [Vitamin D insufficiency in a healthy pediatric population. The importance of early prophylaxis]. Nutr Hosp. 2021 Dec 9;38(6):1155-1161. https://doi.org/10.20960/nh.03606. PMID: 34431303
- Ma T, Bu S, Paneth N, et al. Vitamin D Supplementation in Exclusively Breastfed Infants Is Associated with Alterations in the Fecal Microbiome. Nutrients. 2022 Jan 1;14(1):202. https://doi.org/10.3390/nu14010202. PMID: 35011077
- Mathilde M, Butin M, Pascal R, et al. Local protocol helped to deliver vitamin D levels more accurately in preterm infants. Acta Paediatr. 2022 Jan;111(1):76-85. https://doi.org/10.1111/apa.16088. Epub 2021 Sep 5. PMID: 34460964
- Milagres LC, Filgueiras MS, Rocha NP, et al. Vitamin D is associated with the hypertriglyceridemic waist phenotype in Brazilian children. J Public Health (Oxf). 2021 Dec 10;43(4):e570-e577. https://doi.org/10.1093/pubmed/fdaa041. PMID: 32323726
- Nalbantoğlu Ö, Acar S, Arslan G, et al. Investigating the Efficiency of Vitamin D Administration with Buccal Spray in the Treatment of Vitamin D Deficiency in Children and Adolescents. J Clin Res Pediatr Endocrinol. 2021 Nov 25;13(4):426-432. https://doi.org/10.4274/jcrpe.galenos.2021.2021.0047. Epub 2021 Jun 10. PMID: 34109778
- Nørgaard SM, Dalgård C, Heidemann MS, et al. Bone mineral density at age 7 years does not associate with adherence to vitamin D supplementation guidelines in infancy or vitamin D status in pregnancy and childhood: an Odense Child Cohort study. Br J Nutr. 2021 Nov 28;126(10):1466-1477. https://doi.org/10.1017/S0007114521000301. Epub 2021 Jan 26. PMID: 33494857
- Pang X, Yang Z, Wang J, et al. Relationship between Serum 25OH-Vitamin D2 Level and Vitamin D Status of Children Aged 3-5 Years in China. Nutrients. 2021 Nov 19;13(11):4135. https://doi.org/10.3390/nu13114135. PMID: 34836390
- Patseadou M, Haller DM. Three monthly doses of 150,000 IU of oral cholecalciferol correct vitamin D deficiency in adolescents: A pragmatic study. Int J Clin Pract. 2021 Dec;75(12):e14989. https://doi.org/10.1111/ijcp.14989. Epub 2021 Nov 8. PMID: 34710271
- Pires LV, González-Gil EM, Anguita-Ruiz A, et al. The Vitamin D Decrease in Children with Obesity Is Associated with the Development of Insulin Resistance during Puberty: The PUBMEP Study. Nutrients. 2021 Dec 15;13(12):4488. https://doi.org/10.3390/nu13124488. PMID: 34960039
- Polat İ, Can Yılmaz G, Dedeoğlu Ö. Vitamin D and Nerve Conduction In Pediatric Type-1 Diabetes Mellitus. Brain Dev. 2022 Jan 15:S0387-7604(22)00003-1. https://doi.org/10.1016/j.braindev.2022.01.001. Online ahead of print. PMID: 35042650
- Pérez-Bravo F, Duarte L, Arredondo-Olguín M, et al. Vitamin D status and obesity in children from Chile. Eur J Clin Nutr. 2021 Nov 12. https://doi.org/10.1038/s41430-021-01043-9. Online ahead of print. PMID: 34773092
- Qorbani M, Heidari-Beni M, Ejtahed HS, et al. Association of vitamin D status and cardio-metabolic risk factors in children and adolescents: the CASPIAN-V study. BMC Nutr. 2021 Nov 17;7(1):71. https://doi.org/10.1186/s40795-021-00477-5. PMID: 34784977
- Rahayuningsih SE, Kuswiyanto RB, Rayani P, et al. Low serum 25-hydroxyvitamin D (vitamin D) level among children with ventricular septal defect: how big is the risk for pulmonary hypertension? Cardiol Young. 2022 Jan 24:1-5. https://doi.org/10.1017/S1047951122000051. Online ahead of print. PMID: 35067256

- Rahul M, Gowthaman K, Tewari N, et al. Dental manifestations of pseudo-vitamin-D deficiency rickets in a paediatric patient. Mathur V. BMJ Case Rep. 2021 Dec 30;14(12):e244517. https://doi.org/10.1136/bcr-2021-244517. PMID: 34969788

- Rosser FJ, Han YY, Forno E, et al. Effect of vitamin D supplementation on total and allergen-specific IgE in children with asthma and low vitamin D levels. J Allergy Clin Immunol. 2022 Jan;149(1):440-444.e2. https://doi.org/10.1016/j.jaci.2021.05.037. Epub 2021 Jun 9. PMID: 34118248

- Rouhani P, Hajhashemy Z, Saneei P. Circulating serum vitamin D levels in relation to metabolic syndrome in children: A systematic review and dose-response meta-analysis of epidemiologic studies. Obes Rev. 2021 Nov;22(11):e13314. https://doi.org/10.1111/obr.13314. Epub 2021 Jul 6. PMID: 34231300 Review.

- Sacheck JM, Huang Q, Van Rompay MI, et al. Vitamin D supplementation and cardiometabolic risk factors among diverse schoolchildren: a randomized clinical trial. Am J Clin Nutr. 2022 Jan 11;115(1):73-82. https://doi.org/10.1093/ajcn/nqab319. PMID: 34550329

- Sahni SS, Kakkar S, Kumar R, et al. Osteomalacic Myopathy in Children and Adolescents with Vitamin-D Deficiency. Neurol India. 2021 Nov-Dec;69(6):1650-1654. https://doi.org/10.4103/0028-3886.333492. PMID: 34979664

- Santiprabhob J, Charoentawornpanich P, Khemaprasit K, et al. Effect of gender, diabetes duration, inflammatory cytokines, and vitamin D level on bone mineral density among Thai children and adolescents with type 1 diabetes. Bone. 2021 Dec;153:116112. https://doi.org/10.1016/j.bone.2021.116112. Epub 2021 Jul 10. PMID: 34252600

- Sarıdemir H, Surmeli Onay O, Aydemir O, et al. Questioning the adequacy of standardized vitamin D supplementation protocol in very low birth weight infants: a prospective cohort study. J Pediatr Endocrinol Metab. 2021 Aug 20;34(12):1515-1523. https://doi.org/10.1515/jpem-2021-0390. Print 2021 Dec 20. PMID: 34416104

- Seymen-Karabulut G, Günlemez A, Gökalp AS, et al. Vitamin D Deficiency Prevalence in Late Neonatal Hypocalcemia: A Multicenter Study. J Clin Res Pediatr Endocrinol. 2021 Nov 25;13(4):384-390. https://doi.org/10.4274/jcrpe.galenos.2020.2021.0169. Epub 2021 May 20. PMID: 34013710

- Shan L, Dong H, Wang T, et al. Screen Time, Age and Sunshine Duration Rather Than Outdoor Activity Time Are Related to Nutritional Vitamin D Status in Children With ASD. Front Pediatr. 2022 Jan 13;9:806981. https://doi.org/10.3389/fped.2021.806981. eCollection 2021. PMID: 35096715

- Shulhai AM, Pavlyshyn H, Shulhai O, et al. The association between vitamin D deficiency and metabolic syndrome in Ukrainian adolescents with overweight and obesity. Ann Pediatr Endocrinol Metab. 2021 Nov 15. https://doi.org/10.6065/apem.2142158.079. Online ahead of print. PMID: 34793670

- Soheilipour F, Hamidabad NM. Vitamin D and Calcium Status Among Adolescents with Morbid Obesity Undergoing Bariatric Surgery. Obes Surg. 2021 Nov 20. https://doi.org/10.1007/s11695-021-05809-9. Online ahead of print. PMID: 34799812

- Sun Q, Gao Y, Qiao L, et al. 25(OH)-Vitamin D alleviates neonatal infectious pneumonia via regulating TGFbeta-mediated nuclear translocation mechanism of YAP/TAZ. Bioengineered. 2021 Dec;12(1):8931-8942. https://doi.org/10.1080/21655979.2021.1990000. PMID: 34643152

- Taghivand M, Pell LG, Rahman MZ, et al. Effect of maternal vitamin D supplementation on nasal pneumococcal acquisition, carriage dynamics and carriage density in infants in Dhaka, Bangladesh. BMC Infect Dis. 2022 Jan 13;22(1):52. https://doi.org/10.1186/s12879-022-07032-y. PMID: 35026987

- Thams L, Stounbjerg NG, Hvid LG, et al. Effects of high dairy protein intake and vitamin D supplementation on body composition and cardiometabolic markers in 6-8-y-old children-the D-pro trial. Am J Clin Nutr. 2022 Jan 7:nqab424. https://doi.org/10.1093/ajcn/nqab424. Online ahead of print. PMID: 35015806

- Vierucci F, Fusani L, Saba A, et al. Gestational vitamin D(3) supplementation and sun exposure significantly influence cord blood vitamin D status and 3-epi-25-hydroxyvitamin D(3) levels in term newborns. Clin Chim Acta. 2022 Jan 1;524:59-68. https://doi.org/10.1016/j.cca.2021.11.022. Epub 2021 Nov 25. PMID: 34838794

- Vissing Landgrebe A, Asp Vonsild Lund M, Lausten-Thomsen U, et al. Population-based pediatric reference values for serum parathyroid hormone, vitamin D, calcium, and phosphate in Danish/North-European white children and adolescents. Clin Chim Acta. 2021 Dec;523:483-490. https://doi.org/10.1016/j.cca.2021.10.024. Epub 2021 Oct 22. PMID: 34695445

- Weiler HA, Vanstone CA, Razaghi M, et al. Disparities in Vitamin D Status of Newborn Infants from a Diverse Sociodemographic Population in Montreal, Canada. J Nutr. 2022 Jan 11;152(1):255-268. https://doi.org/10.1093/jn/nxab344. PMID: 34612495

- Williams TL, Boyle J, Mittermuller BA, et al. Association between Vitamin D and Dental Caries in a Sample of Canadian and American Preschool-Aged Children. Nutrients. 2021 Dec 14;13(12):4465. https://doi.org/10.3390/nu13124465. PMID: 34960016

- Wright BA, Ketchen NK, Rasmussen LN, et al. Impact of elexacaftor/tezacaftor/ivacaftor on vitamin D absorption in cystic fibrosis patients. Pediatr Pulmonol. 2021 Dec 3. https://doi.org/10.1002/ppul.25781. Online ahead of print. PMID: 34859619

- Yuksel M, Demir B, Mizikoğlu Ö, et al. Course of vitamin D levels before and after liver transplantation in pediatric patients. Pediatr Transplant. 2021 Nov;25(7):e14049. https://doi.org/10.1111/petr.14049. Epub 2021 Jun 2. PMID: 34076935

- Zabeen B, Nahar J, Ahmed B, et al. Vitamin D status in children and adolescents with type 1 diabetes in a specialized diabetes care centre in Bangladesh. Endocrinol Diabetes Metab. 2022 Jan;5(1):e00312. https://doi.org/10.1002/edm2.312. Epub 2021 Nov 12. PMID: 34766458

- Zandieh N, Hemami MR, Darvishi A, et al. Economic evaluation of a national vitamin D supplementation program among Iranian adolescents for the prevention of adulthood type 2 diabetes mellitus. BMC Complement Med Ther. 2022 Jan 3;22(1):1. https://doi.org/10.1186/s12906-021-03474-0. PMID: 34980092

- Zhang H, Luo M. Correlation between serum vitamin D expression and changes of immune indexes in children with pneumonia of different degrees. Pak J Pharm Sci. 2021 Nov;34(6(Special)):2467-2472. PMID: 35039261

- Zhang J, Gao R, Jiang Y, et al. Novel serological biomarker models composed of bone turnover markers, vitamin D, and estradiol and their auxiliary diagnostic value in girls with idiopathic central precocious puberty. Bone. 2022 Jan;154:116221. https://doi.org/10.1016/j.bone.2021.116221. Epub 2021 Sep 30. PMID: 34600161

PNEUMOLOGY

- Afzal M, Kazmi I, Al-Abbasi FA, et al. Current Overview on Therapeutic Potential of Vitamin D in Inflammatory Lung Diseases. Biomedicines. 2021 Dec 6;9(12):1843. https://doi.org/10.3390/biomedicines9121843. PMID: 34944659

- Amaral CSFD, Jordão ÉAOC, Oliveira CL, et al. Asthma and vitamin D in Brazilian adolescents: Study of Cardiovascular Risks in Adolescents (ERICA). J Bras Pneumol. 2021 Dec 15;47(6):e20210281. https://doi.org/10.36416/1806-3756/e20210281. eCollection 2021. PMID: 34932722

- Byun SY, Bae MH, Lee NR, et al. Association between vitamin D deficiency at one month of age and bronchopulmonary dysplasia. Medicine (Baltimore). 2021 Dec 3;100(48):e27966. https://doi.org/10.1097/MD.0000000000027966. PMID: 35049200

- Callejo M, Blanco I, Barberá JA, et al. Vitamin D deficiency, a potential cause for insufficient response to sildenafil in pulmonary arterial hypertension. Eur Respir J. 2021 Nov 4;58(5):2101204. https://doi.org/10.1183/13993003.01204-2021. Print 2021 Oct. PMID: 34385273

- Cao Y, Wang X, Liu P, et al. Vitamin D and the risk of latent tuberculosis infection: a systematic review and meta-analysis. BMC Pulm Med. 2022 Jan 19;22(1):39. https://doi.org/10.1186/s12890-022-01830-5. PMID: 35045861

- Einisadr A, Rajabi M, Moezzi H, et al. Impact of rapid correction of vitamin D deficiency in asthmatic patients. Wien Klin Wochenschr. 2022 Jan;134(1-2):18-23. https://doi.org/10.1007/s00508-021-01975-z. Epub 2021 Nov 24. PMID: 34817666

- Erfanian S, Jafaripour S, Jokar MH, et al. The effect of vitamin D on GATA3 gene expression in peripheral blood mononuclear cells in allergic asthma. Adv Respir Med. 2022 Jan 27. https://doi.org/10.5603/ARM.a2022.0004. Online ahead of print. PMID: 35084728

- Gayan-Ramirez G, Janssens W. Vitamin D Actions: The Lung Is a Major Target for Vitamin D, FGF23, and Klotho. JBMR Plus. 2021 Nov 18;5(12):e10569. https://doi.org/10.1002/jbm4.10569. eCollection 2021 Dec. PMID: 34950829

- Kilavuz A, Celikhisar H, Dasdemir Ilkhan G. The Association of Serum 25(OH) Vitamin D Level with Severity of Obstructive Sleep Apnea Syndrome in Patients with Syndrome Z (the Interaction of Obstructive Sleep Apnea with Metabolic Syndrome). Metab Syndr Relat Disord. 2021 Dec;19(10):549-555. https://doi.org/10.1089/met.2021.0066. Epub 2021 Sep 9. PMID: 34515542

- Liyanage G, Kaneshapillai A, Kanthasamy S. Serum Vitamin D Level and Risk of Community-Acquired Pneumonia: A Case-Control Study. Interdiscip Perspect Infect Dis. 2021 Nov 28;2021:2157337. https://doi.org/10.1155/2021/2157337. eCollection 2021. PMID: 34876900

- Ma JG, Wu GJ, Xiao HL, et al. Vitamin D has an effect on airway inflammation and Th17/Treg balance in asthmatic mice. Kaohsiung J Med Sci. 2021 Dec;37(12):1113-1121. https://doi.org/10.1002/kjm2.12441. Epub 2021 Aug 30. PMID: 34460994

- Rivero-Yeverino D, López-García AI, Caballero-López CG, et al. [Vitamin D and respiratory allergy: state of the art]. Rev Alerg Mex. 2022;69 Suppl 1:s46-s54. https://doi.org/10.29262/ram.v69iSupl1.1033. PMID: 34998310 Review. Spanish.

- Sakurai R, Singh H, Wang Y, et al. Effect of Perinatal Vitamin D Deficiency on Lung Mesenchymal Stem Cell Differentiation and Injury Repair Potential. Am J Respir Cell Mol Biol. 2021 Nov;65(5):521-531. https://doi.org/10.1165/rcmb.2020-0183OC. PMID: 34126864

- Sami R, Zohal M, Marhamati KHamene A, et al. 25-Hydroxy vitamin D and body composition are associated with pulmonary function in non-cystic fibrosis bronchiectasis: A cross-sectional study. Clin Nutr ESPEN. 2021 Dec;46:527-531. https://doi.org/10.1016/j.clnesp.2021.08.009. Epub 2021 Aug 28. PMID: 34857245

- Thapa SS, Sandhu J, Sah BP. An Uncommon Cause of Severe Hypercalcemia: Vitamin D Supplementation in Sarcoidosis. Am J Med. 2021 Nov;134(11):e555-e556. https://doi.org/10.1016/j.amjmed.2021.04.037. Epub 2021 May 28. PMID: 34058157

- Wannamethee SG, Welsh P, Papacosta O, et al. Vitamin D deficiency, impaired lung function and total and respiratory mortality in a cohort of older men: cross-sectional and prospective findings from The British Regional Heart Study. BMJ Open. 2021 Dec 21;11(12):e051560. https://doi.org/10.1136/bmjopen-2021-051560. PMID: 34933860

- Wood C, Hasan S, Darukhanavala A, et al. A Clinician's guide to vitamin D supplementation for patients with cystic fibrosis. J Clin Transl Endocrinol. 2021 Nov 6;26:100273. https://doi.org/10.1016/j.jcte.2021.100273. eCollection 2021 Dec. PMID: 34815946

- Xu S, Xie X, Jiao L, et al. Association analysis of pulmonary tuberculosis and vitamin D Receptor Gene Polymorphisms of Han population in Western China. Microb Pathog. 2021 Dec;161(Pt A):105190. https://doi.org/10.1016/j.micpath.2021.105190. Epub 2021 Oct 4. PMID: 34619312 Clinical Trial.

PSYCHIATRY

- Amini S, Jafarirad S, Abiri B. Vitamin D, testosterone and depression in middle-aged and elderly men: a systematic review. Crit Rev Food Sci Nutr. 2021 Dec 14:1-12. https://doi.org/10.1080/10408398.2021.2015284. Online ahead of print. PMID: 34904472

- Arathimos R, Ronaldson A, Howe LJ, et al. Vitamin D and the risk of treatment-resistant and atypical depression: A Mendelian randomization study. Transl Psychiatry. 2021 Nov 4;11(1):561. https://doi.org/10.1038/s41398-021-01674-3. PMID: 34737282

- Ceolin G, Antunes LDC, Moretti M, et al. VITAMIN D AND DEPRESSION IN

OLDER ADULTS: LESSONS LEARNED FROM OBSERVATIONAL AND CLINICAL STUDIES. Nutr Res Rev. 2022 Jan 13:1-63. https://doi.org/10.1017/S0954422422000026. Online ahead of print. PMID: 35022097 Review.

- Dey A, Khanra S, Kshitiz KK. Serum calcium, parathormone, calcitonin, vitamin D and their relationships with craving during early abstinence in alcohol use disorder: A hospital based prospective study. Asian J Psychiatr. 2021 Dec;66:102898. https://doi.org/10.1016/j.ajp.2021.102898. Epub 2021 Oct 29. PMID: 34740124
- Gaughran F, Stringer D, Wojewodka G, et al. Effect of Vitamin D Supplementation on Outcomes in People With Early Psychosis: The DFEND Randomized Clinical Trial. JAMA Netw Open. 2021 Dec 1;4(12):e2140858. https://doi.org/10.1001/jamanetworkopen.2021.40858. PMID: 34962559
- Guzek D, Kołota A, Lachowicz K, et al. Association between Vitamin D Supplementation and Mental Health in Healthy Adults: A Systematic Review. J Clin Med. 2021 Nov 3;10(21):5156. https://doi.org/10.3390/jcm10215156. PMID: 34768677
- Kamalzadeh L, Saghafi M, Mortazavi SS, et al. Vitamin D deficiency and depression in obese adults: a comparative observational study. BMC Psychiatry. 2021 Nov 30;21(1):599. https://doi.org/10.1186/s12888-021-03586-4. PMID: 34847921
- Maddahi N, Setayesh L, Mehranfar S, et al. Association of serum levels of vitamin D and vitamin D binding protein with mental health of overweight/obese women: A cross sectional study. Clin Nutr ESPEN. 2022 Feb;47:260-266. https://doi.org/10.1016/j.clnesp.2021.11.034. Epub 2021 Dec 8. PMID: 35063211
- Rajabi-Naeeni M, Dolatian M, Qorbani M, et al. Effect of omega-3 and vitamin D co-supplementation on psychological distress in reproductive-aged women with pre-diabetes and hypovitaminosis D: A randomized controlled trial. Brain Behav. 2021 Nov;11(11):e2342. https://doi.org/10.1002/brb3.2342. Epub 2021 Sep 2. PMID: 34473420
- Schmidt RJ. Gestational Vitamin D and Autism Spectrum Disorder. Biol Psychiatry. 2021 Dec 1;90(11):738-741. https://doi.org/10.1016/j.biopsych.2021.09.014. PMID: 34736556
- Silva MRM, Barros WMA, Silva MLD, et al. Relationship between vitamin D deficiency and psychophysiological variables: a systematic review of the literature. Clinics (Sao Paulo). 2021 Nov 8;76:e3155. https://doi.org/10.6061/clinics/2021/e3155. eCollection 2021. PMID: 34755759
- Tsiglopoulos J, Pearson N, Mifsud N, et al. The association between vitamin D and symptom domains in psychotic disorders: A systematic review. Schizophr Res. 2021 Nov;237:79-92. https://doi.org/10.1016/j.schres.2021.08.001. Epub 2021 Sep 8. PMID: 34509104 Review.
- van den Berg KS, Marijnissen RM, van den Brink RHS, et al. Adverse health outcomes in vitamin D supplementation trials for depression: A systematic review. Ageing Res Rev. 2021 Nov;71:101442. https://doi.org/10.1016/j.arr.2021.101442. Epub 2021 Aug 12. PMID: 34390851
- Wei YX, Liu BP, Qiu HM, et al. Effects of vitamin D-related gene polymorphisms on attempted suicide. Psychiatr Genet. 2021 Dec 1;31(6):230-238. https://doi.org/10.1097/YPG.0000000000000295. PMID: 34412081
- Wu M, Xie J, Zhou Z, et al. Fine particulate matter, vitamin D, physical activity, and major depressive disorder in elderly adults: Results from UK Biobank. J Affect Disord. 2022 Feb 15;299:233-238. https://doi.org/10.1016/j.jad.2021.12.009. Epub 2021 Dec 5. PMID: 34879260
- Zubizarreta JR, Umhau JC, Deuster PA, et al. Evaluating the heterogeneous effect of a modifiable risk factor on suicide: The case of vitamin D deficiency. Int J Methods Psychiatr Res. 2021 Nov 5:e1897. https://doi.org/10.1002/mpr.1897. Online ahead of print. PMID: 34739164

RHEUMATOLOGY

- Al-Khudhairy MW, AlOtaibi A, AbdulRahman L, et al. The Association of Self-Reported Iron and Vitamin D Levels on Sleep Quality and Pain Perception in a Subset of Saudi Population. Risk Manag Healthc Policy. 2021 Dec 1;14:4853-4865. https://doi.org/10.2147/RMHP.S318698. eCollection 2021. PMID: 34880694
- Al-Rawaf HA, Alghadir AH, Gabr SA. Circulating MicroRNA Expression, Vitamin D, and Hypercortisolism as Predictors of Osteoporosis in Elderly Postmenopausal Women. Dis Markers. 2021 Dec 13;2021:3719919. https://doi.org/10.1155/2021/3719919. eCollection 2021. PMID: 34938374
- Alabajos-Cea A, Herrero-Manley L, Suso-Martí L, et al. The Role of Vitamin D in Early Knee Osteoarthritis and Its Relationship with Their Physical and Psychological Status. Nutrients. 2021 Nov 12;13(11):4035. https://doi.org/10.3390/nu13114035. PMID: 34836290
- Ali OME. Prevalence of Vitamin D Deficiency and Its Relationship with Clinical Outcomes in Patients with Fibromyalgia: a Systematic Review of the Literature. SN Compr Clin Med. 2022;4(1):38. https://doi.org/10.1007/s42399-021-01105-w. Epub 2022 Jan 15. PMID: 35071984
- Amini Kadijani A, Bagherifard A, Mohammadi F, et al. Association of Serum Vitamin D with Serum Cytokine Profile in Patients with Knee Osteoarthritis. Cartilage. 2021 Dec;13(1_suppl):1610S-1618S. https://doi.org/10.1177/19476035211010309. Epub 2021 Apr 23. PMID: 33890506
- Athanassiou L, Kostoglou-Athanassiou I, Tsakiridis P, et al. Vitamin D levels in Greek patients with systemic lupus erythematosus. Lupus. 2022 Jan;31(1):125-132. https://doi.org/10.1177/09612033211066462. Epub 2022 Jan 10. PMID: 35006029
- Bello HJ, Caballero-García A, Pérez-Valdecantos D, et al. Effects of Vitamin D in Post-Exercise Muscle Recovery. A Systematic Review and Meta-Analysis. Nutrients. 2021 Nov 10;13(11):4013. https://doi.org/10.3390/nu13114013. PMID: 34836268
- Bellone F, Catalano A, Sottile AR, et al. Early Changes of VEGF Levels After Zoledronic Acid in Women With Postmenopausal Osteoporosis: A Potential Role of Vitamin D. Front Med (Lausanne). 2021 Nov 18;8:748438. https://doi.org/10.3389/fmed.2021.748438. eCollection 2021. PMID: 34869440
- Das A, Gopinath SD, Arimbasseri GA. Systemic ablation of vitamin D receptor leads to skeletal muscle glycogen storage disorder in mice. J Cachexia Sarcopenia Muscle. 2021 Dec 8. https://doi.org/10.1002/jcsm.12841. Online ahead of print. PMID: 34877816

- Diaconu AD, Ostafie I, Ceasovschih A, et al. Role of Vitamin D in Systemic Sclerosis: A Systematic Literature Review. J Immunol Res. 2021 Nov 29;2021:9782994. https://doi.org/10.1155/2021/9782994. eCollection 2021. PMID: 34881335

- Duan A, Ma Z, Liu W, et al. 1,25-Dihydroxyvitamin D Inhibits Osteoarthritis by Modulating Interaction Between Vitamin D Receptor and NLRP3 in Macrophages. J Inflamm Res. 2021 Dec 3;14:6523-6542. https://doi.org/10.2147/JIR.S339670. eCollection 2021. PMID: 34887675

- Ertugrul B, Akgun B, Artas G, et al. Evaluation of BMP-2, VEGF, and Vitamin D Receptor Levels in the Ligamentum Flavum of Patients with Lumbar Spinal Stenosis and Disc Herniation. Turk Neurosurg. 2022;32(1):91-96. https://doi.org/10.5137/1019-5149.JTN.33552-20.2. PMID: 34751419

- Gaffney-Stomberg E, Hughes JM, Guerriere KI, et al. Once daily calcium (1000 mg) and vitamin D (1000 IU) supplementation during military training prevents increases in biochemical markers of bone resorption but does not affect tibial microarchitecture in Army recruits. Bone. 2022 Feb;155:116269. https://doi.org/10.1016/j.bone.2021.116269. Epub 2021 Nov 30. PMID: 34861430

- Ghasemifard N, Hassanzadeh-Rostami Z, Abbasi A, et al. Effects of vitamin D-fortified oil intake versus vitamin D supplementation on vitamin D status and bone turnover factors: A double blind randomized clinical trial. Clin Nutr ESPEN. 2022 Feb;47:28-35. https://doi.org/10.1016/j.clnesp.2021.12.025. Epub 2021 Dec 24. PMID: 35063214

- Ginsberg C, Hoofnagle AN, Katz R, et al. The Vitamin D Metabolite Ratio Is Associated With Changes in Bone Density and Fracture Risk in Older Adults. J Bone Miner Res. 2021 Dec;36(12):2343-2350. https://doi.org/10.1002/jbmr.4426. Epub 2021 Aug 29. PMID: 34423858

- Guler E, Baripoglu YE, Alenezi H, et al. Vitamin D(3)/vitamin K(2)/magnesium-loaded polylactic acid/tricalcium phosphate/polycaprolactone composite nanofibers demonstrated osteoinductive effect by increasing Runx2 via Wnt/beta-catenin pathway. Int J Biol Macromol. 2021 Nov 1;190:244-258. https://doi.org/10.1016/j.ijbiomac.2021.08.196. Epub 2021 Sep 4. PMID: 34492244

- Hatano M, Kitajima I, Nakamura M, et al. Vitamin D-resistant osteomalacia after 10 years of haemodialysis in a patient with rheumatoid arthritis. Rheumatology (Oxford). 2021 Dec 24;61(1):e8-e10. https://doi.org/10.1093/rheumatology/keab660. PMID: 34427629

- Iwamoto Y, Tatsumi F, Dan K, et al. Vitamin D deficiency osteomalacia triggered by long-term social withdrawal and unbalanced diet in a Japanese middle-aged subject: A case report. Medicine (Baltimore). 2022 Jan 14;101(2):e28589. https://doi.org/10.1097/MD.0000000000028589. PMID: 35029240

- Jabbour J, Rahme M, Mahfoud ZR, et al. Effect of high dose vitamin D supplementation on indices of sarcopenia and obesity assessed by DXA among older adults: A randomized controlled trial. Endocrine. 2022 Jan 14. https://doi.org/10.1007/s12020-021-02951-3. Online ahead of print. PMID: 35028890

- Jiang J, Shao M, Wu X. Vitamin D and risk of ankylosing spondylitis: A two-sample mendelian randomization study. Hum Immunol. 2022 Jan;83(1):81-85. https://doi.org/10.1016/j.humimm.2021.09.003. Epub 2021 Sep 11. PMID: 34521568

- Kawashima I, Hiraiwa H, Ishizuka S, et al. Displaced tibial and fibular stress fractures in a female elite pole-vaulter with menstrual dysfunction, vitamin D deficiency, and high serum pentosidine. J Orthop Sci. 2021 Nov 15:S0949-2658(21)00327-4. https://doi.org/10.1016/j.jos.2021.08.019. Online ahead of print. PMID: 34794859

- Kucuk A, Baykara RA, Tuzcu A, et al. Could ferritin, vitamin B(12), and vitamin D play a role in the etiopathogenesis of fibromyalgia syndrome? Rom J Intern Med. 2021 Nov 20;59(4):384-393. https://doi.org/10.2478/rjim-2021-0022. Print 2021 Dec 1. PMID: 34142515

- Lampropoulou-Adamidou K, Karlafti E, Argyrou C, et al. Effect of Calcium and Vitamin D Supplementation With and Without Collagen Peptides on Volumetric and Areal Bone Mineral Density, Bone Geometry and Bone Turnover in Postmenopausal Women With Osteopenia. J Clin Densitom. 2021 Nov 25:S1094-6950(21)00099-8. https://doi.org/10.1016/j.jocd.2021.11.011. Online ahead of print. PMID: 34980546

- Lee HJ, Song YM, Baek S, et al. Vitamin D Enhanced the Osteogenic Differentiation of Cell Spheroids Composed of Bone Marrow Stem Cells. Medicina (Kaunas). 2021 Nov 19;57(11):1271. https://doi.org/10.3390/medicina57111271. PMID: 34833489

- Lim C, Roh YH, Kim S, et al. Preoperative Vitamin D Deficiency is Associated with Postoperative Functional Recovery and Complications after Hip Fracture Surgery. J Bone Metab. 2021 Nov;28(4):333-338. https://doi.org/10.11005/jbm.2021.28.4.333. Epub 2021 Nov 30. PMID: 34905680

- Ling Y, Xu F, Xia X, et al. Vitamin D supplementation reduces the risk of fall in the vitamin D deficient elderly: An updated meta-analysis. Clin Nutr. 2021 Nov;40(11):5531-5537. https://doi.org/10.1016/j.clnu.2021.09.031. Epub 2021 Sep 27. PMID: 34656949

- Li WX, Qin XH, Poon CC, et al. Vitamin D/Vitamin D Receptor Signaling Attenuates Skeletal Muscle Atrophy by Suppressing Renin-Angiotensin System. J Bone Miner Res. 2022 Jan;37(1):121-136. https://doi.org/10.1002/jbmr.4441. Epub 2021 Sep 29. PMID: 34490953

- Magro R, Saliba C, Camilleri L, et al. Vitamin D supplementation in systemic lupus erythematosus: relationship to disease activity, fatigue and the interferon signature gene expression. BMC Rheumatol. 2021 Dec 3;5(1):53. https://doi.org/10.1186/s41927-021-00223-1. PMID: 34857051

- Mauck MC, Barton CE, Tungate A, et al. Peritraumatic Vitamin D Levels Predict Chronic Pain Severity and Contribute to Racial Differences in Pain Outcomes Following Major Thermal Burn Injury. J Burn Care Res. 2021 Nov 24;42(6):1186-1191. https://doi.org/10.1093/jbcr/irab031. PMID: 33564878

- Meza-Meza MR, Muñoz-Valle JF, Ruiz-Ballesteros AI, et al. Association of High Calcitriol Serum Levels and Its Hydroxylation Efficiency Ratio with Disease Risk in SLE Patients with Vitamin D Deficiency. J Immunol Res. 2021 Dec 31;2021:2808613. https://doi.org/10.1155/2021/2808613. eCollection 2021. PMID: 35005031

- Micielska K, Flis M, Kortas JA, et al. Nordic Walking Rather Than High Intensity Interval Training Reduced Myostatin Concentration More Effectively in Elderly Subjects and the Range of This Drop Was Modified by Me-

tabolites of Vitamin D. Nutrients. 2021 Dec 8;13(12):4393. https://doi.org/10.3390/nu13124393. PMID: 34959945

- Montemor CN, Fernandes MTP, Marquez AS, et al. Vitamin D deficiency, functional status, and balance in older adults with osteoarthritis. World J Clin Cases. 2021 Nov 6;9(31):9491-9499. https://doi.org/10.12998/wjcc.v9.i31.9491. PMID: 34877283

- Mouli VH, Schudrowitz N, Carrera CX, et al. High-Dose Vitamin D Supplementation Can Correct Hypovitaminosis D Prior to Total Knee Arthroplasty. J Arthroplasty. 2022 Feb;37(2):274-278. https://doi.org/10.1016/j.arth.2021.10.016. Epub 2021 Nov 2. PMID: 34737019

- Namutebi F, Kayima J, Kaddumukasa M. Vitamin D and its association with symptom severity in knee osteoarthritis: a cross sectional study at a national referral hospital in Uganda. BMC Rheumatol. 2021 Dec 27;5(1):56. https://doi.org/10.1186/s41927-021-00228-w. PMID: 34955099

- Neale RE, Wilson LF, Black LJ, et al. Hospitalisations for falls and hip fractures attributable to vitamin D deficiency in older Australians. Br J Nutr. 2021 Dec 14;126(11):1682-1686. https://doi.org/10.1017/S0007114521000416. Epub 2021 Jan 29. PMID: 33509323

- Ozsoy-Unubol T, Candan Z, Atar E, et al. The effect of vitamin D and exercise on balance and fall risk in postmenopausal women: A randomised controlled study. Int J Clin Pract. 2021 Dec;75(12):e14851. https://doi.org/10.1111/ijcp.14851. Epub 2021 Sep 21. PMID: 34516033 Clinical Trial.

- Pakpahan C, Wungu CDK, Agustinus A, et al. Do Vitamin D receptor gene polymorphisms affect bone mass density in men?: A meta-analysis of observational studies. Ageing Res Rev. 2022 Jan 19;75:101571. https://doi.org/10.1016/j.arr.2022.101571. Online ahead of print. PMID: 35063697 Review.

- Ramanathan D, Emara AK, Pinney S, et al. Vitamin D Deficiency and Outcomes After Ankle Fusion: A Short Report. Foot Ankle Int. 2022 Jan 11:10711007211068785. https://doi.org/10.1177/10711007211068785. Online ahead of print. PMID: 35012371

- Senosi MR, Fathi HM, Baki NMA, et al. Bone mineral density, vitamin D receptor (VDR) gene polymorphisms, fracture risk assessment (FRAX), and trabecular bone score (TBS) in rheumatoid arthritis patients: connecting pieces of the puzzle. Clin Rheumatol. 2022 Jan 19. https://doi.org/10.1007/s10067-022-06048-8. Online ahead of print. PMID: 35048212

- Sevindik Günay D, Safer U, Binay Safer V. Comment on "Effects of adequate dietary protein with whey protein, leucine, and vitamin D supplementation on sarcopenia in older adults: An open-label, parallel-group study". Clin Nutr. 2022 Feb;41(2):583-584. https://doi.org/10.1016/j.clnu.2021.12.022. Epub 2021 Dec 16. PMID: 34998614

- Sim DS, Tay K, Howe TS, et al. Preoperative severe vitamin D deficiency is a significant independent risk factor for poorer functional outcome and quality of life 6 months after surgery for fragility hip fractures. Osteoporos Int. 2021 Nov;32(11):2217-2224. https://doi.org/10.1007/s00198-021-05970-y. Epub 2021 May 7. PMID: 33959793

- Sim M, Zhu K, Lewis JR, et al. Association between vitamin D status and long-term falls-related hospitalization risk in older women. J Am Geriatr Soc. 2021 Nov;69(11):3114-3123. https://doi.org/10.1111/jgs.17442. Epub 2021 Sep 10. PMID: 34505706

- Skuladottir SS, Ramel A, Eymundsdottir H, et al. Serum 25-Hydroxy-Vitamin D Status and Incident Hip Fractures in Elderly Adults: Looking Beyond Bone Mineral Density. J Bone Miner Res. 2021 Dec;36(12):2351-2360. https://doi.org/10.1002/jbmr.4450. Epub 2021 Oct 18. PMID: 34585782

- Soma T, Iwasaki R, Sato Y, et al. Osteonecrosis development by tooth extraction in zoledronate treated mice is inhibited by active vitamin D analogues, anti-inflammatory agents or antibiotics. Sci Rep. 2022 Jan 7;12(1):19. https://doi.org/10.1038/s41598-021-03966-6. PMID: 34997043

- Sudjaritruk T, Bunupuradah T, Aurpibul L, et al. Impact of Vitamin D and Calcium Supplementation on Bone Mineral Density and Bone Metabolism Among Thai Adolescents With Perinatally Acquired Human Immunodeficiency Virus (HIV) Infection: A Randomized Clinical Trial. Clin Infect Dis. 2021 Nov 2;73(9):1555-1564. https://doi.org/10.1093/cid/ciab547. PMID: 34125899 Clinical Trial.

- Verlinden L, Carmeliet G. Integrated View on the Role of Vitamin D Actions on Bone and Growth Plate Homeostasis. JBMR Plus. 2021 Nov 18;5(12):e10577. https://doi.org/10.1002/jbm4.10577. eCollection 2021 Dec. PMID: 34950832

- Waterhouse M, Sanguineti E, Baxter C, et al. Vitamin D supplementation and risk of falling: outcomes from the randomized, placebo-controlled D-Health Trial. J Cachexia Sarcopenia Muscle. 2021 Dec;12(6):1428-1439. https://doi.org/10.1002/jcsm.12759. Epub 2021 Aug 1. PMID: 34337905

- Wijayabahu AT, Mickle AM, Mai V, et al. Associations between Vitamin D, Omega 6:Omega 3 Ratio, and Biomarkers of Aging in Individuals Living with and without Chronic Pain. Nutrients. 2022 Jan 9;14(2):266. https://doi.org/10.3390/nu14020266. PMID: 35057447

- Xu HW, Zhang SB, Yi YY, et al. Relationship between Vitamin D and Nonspecific Low Back Pain May Be Mediated by Inflammatory Markers. Pain Physician. 2021 Nov;24(7):E1015-E1023. PMID: 34704712

- Zafeiris EP, Babis GC, Zafeiris CP, et al. Association of vitamin D, BMD and knee osteoarthritis in postmenopausal women. J Musculoskelet Neuronal Interact. 2021 Dec 1;21(4):509-516. PMID: 34854390

- Zhang TP, Li HM, Huang Q, et al. Vitamin D Metabolic Pathway Genes Polymorphisms and Their Methylation Levels in Association With Rheumatoid Arthritis. Front Immunol. 2021 Dec 2;12:731565. https://doi.org/10.3389/fimmu.2021.731565. eCollection 2021. PMID: 34925313