

VITAMIN D

UpDates


Vol. 7 - N. 2 - 2024

Sito Web

www.vitamin-d-journal.it

 Editoriale

 Carenza di vitamina D
e *Complex Regional
Pain Syndrome*

 La carenza
di vitamina D
in età pediatrica:
un problema
che viene da lontano
ma che riemerge

 Selezione
bibliografica

www.pacinimedicina.it

Direttore Scientifico

Maurizio Rossini

Comitato Scientifico

Francesco Bertoldo

Rachele Ciccocioppo

Andrea Fagiolini

Davide Gatti

Sandro Giannini

Paolo Gisondi

Andrea Giusti

Giovanni Iolascon

Stefano Lello

Diego Peroni

Gianenrico Senna

Pasquale Strazzullo

Giovanni Targher

Leonardo Triggiani

Assistente Editoriale

Sara Rossini

Copyright by

Pacini Editore srl

Direttore Responsabile

Patrizia Pacini

Edizione

Pacini Editore Srl

Via Gherardesca 1 • 56121 Pisa

Tel. 050 313011 • Fax 050 3130300

Info@pacinieditore.it • www.pacinieditore.it

Divisione Pacini Editore Medicina

Fabio Poponcini • Business Unit Manager

Tel. 050 31 30 218 • fpoponcini@pacinieditore.it

Alessandra Crosato • Account Manager

Tel. 050 31 30 239 • acrosato@pacinieditore.it

Francesca Gori • Business Development &

Scientific Editorial Manager

fgori@pacinieditore.it

Manuela Mori • Digital Publishing & Advertising

Tel. 050 31 30 217 • mmori@pacinieditore.it

Redazione

Lucia Castelli

Tel. 050 3130224 • lcastelli@pacinieditore.it

Stampa

Industrie Grafiche Pacini • Pisa

ISSN: 2611-2876 (online)

Registrazione presso il Tribunale di Pisa n. 2/18 del 23-2-2018
L'editore resta a disposizione degli aventi diritto con i quali non è stato possibile comunicare e per le eventuali omissioni. Le fotocopie per uso personale del lettore (per propri scopi di lettura, studio, consultazione) possono essere effettuate nei limiti del 15% di ciascun volume/fascicolo di periodico, escluse le pagine pubblicitarie, dietro pagamento alla SIAE del compenso previsto dalla Legge n. 633 del 1941 e a seguito di specifica autorizzazione rilasciata da CLEARedi: <https://www.clearedi.org>. Edizione digitale - Giugno 2024.

Maurizio Rossini*Dipartimento di Medicina,
Sezione di Reumatologia, Università di Verona*

Cari Lettori

in questo numero torniamo a parlare di carenza di vitamina D in età pediatrica, la cui prevalenza è tornata ad aumentare in alcuni Paesi, come documentato in Inghilterra. Sì, perché come scrive l'Autore dell'articolo a cui abbiamo affidato il compito di un aggiornamento in questo campo, sono cambiati e diventati più frequenti alcuni fattori di rischio come la composizione etnica e il sovrappeso. È aumentata in Europa la popolazione con colorito della pelle più scuro o con abitudini culturali quali la copertura estrema per motivi religiosi, fattori che com'è noto ostacolano la produzione endogena di vitamina D tramite l'esposizione solare. Ma anche la prevalenza del sovrappeso è arrivata al 30% della popolazione pediatrica, condizione anche questa che rappresenta un importante fattore di rischio per ipovitaminosi D e che richiede notoriamente una supplementazione con dosi maggiori, specie se si tratta di obesità. Al fine di assicurare un adeguato sviluppo scheletrico ma anche per probabili benefici extra-scheletrici, si ricorda quindi come sia importante assicurare un adeguato stato vitaminico D nelle varie fasi della crescita, necessariamente ricorrendo a supplementazione specie nei primi anni di vita e se la madre era in condizioni di ipovitaminosi D. In età pediatrica l'Autore sottolinea e documenta come le dosi di vitamina D debbano essere assunte quotidianamente e non in bolo mensile o settimanale, probabilmente perché alte dosi in bolo possono indurre l'espressione di enzimi del catabolismo inattivanti la vitamina D, come anche da noi ipotizzato sulla base dei risultati di un nostro recente studio sulla farmacocinetica¹. In un precedente numero di questa rivista² avevamo anche proposto una giustificazione farmacocinetica e farmacodinamica a supporto degli esclusivi benefici, in particolare extrascheletrici, riportati con la somministrazione quotidiana di colecalciferolo.

Nell'altro articolo ho chiesto agli Autori di fare il punto su una possibile correlazione tra carenza di vitamina D e sindrome dolorosa regionale complessa, più praticamente definita algodistrofia, essendo recentemente stato riportato che pazienti con frattura di radio distale complicata da sindrome algodistrofica presentavano concentrazioni plasmatiche di vitamina D significativamente inferiori rispetto a coloro che non erano andati incontro a questa complicanza. Sulla base delle evidenze disponibili, come vedrete, gli Autori riconoscono che la carenza di vitamina D possa predisporre a un aumentato rischio di sindrome algodistrofica sostanzialmente per due motivi: il primo perché in grado di determinare, anche per il connesso rischio di caduta, un aumento di eventi fratturativi, specie di quelli intra-articolari, predisponenti la sindrome. Il secondo motivo potrebbe essere rappresentato dal fatto che l'ipovitaminosi D rappresenta una condizione predisponente la neuroflogosi e un assetto immunologico proflogogeno, entrambi coinvolti nella patogenesi della sindrome algodistrofica. A riprova di un possibile nesso causale tra livelli di vitamina D e di citochine proflogogene, ricordano studi che dimostrano come la supplementazione vitaminica D sia in grado di ridurre la concentrazione sierica di TNFalfa e di IL-6, oltre che di IL-17, come da noi osservato in un recente studio³. Da ciò

Corrispondenza**Maurizio Rossini**

maurizio.rossini@univr.it

How to cite this article: Rossini M. Editoriale. Vitamin D - UpDates 2024;7(2):2-3.

© Copyright by Pacini Editore srl



L'articolo è open access e divulgato sulla base della licenza CC-BY-NC-ND (Creative Commons Attribuzione - Non commerciale - Non opere derivate 4.0 Internazionale). L'articolo può essere usato indicando la menzione di paternità adeguata e la licenza; solo a scopi non commerciali; solo in originale. Per ulteriori informazioni: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.it>

l'ipotesi che una supplementazione con vitamina D possa contribuire a determinare un beneficio aggiuntivo o più rapido del noto approccio terapeutico dell'algodistrofia con neridronato. Probabilmente contribuirebbe anche a ridurre l'incidenza o ad attenuare la manifestazione clinica dell'effetto collaterale degli aminobisfosfonati rappresentato dalla reazione di fase acuta, visto che i livelli sierici di 25(OH)D la modulano ⁴.

Cosa ne pensate?

Buona lettura

Bibliografia

- ¹ Fassio A, Adami G, Rossini M, et al. Pharmacokinetics of Oral Cholecalciferol in Healthy Subjects with Vitamin D Deficiency: A Randomized Open-Label Study. *Nutrients* 2020;12:1553. <https://doi.org/10.3390/nu12061553>.
- ² Adami G, Fassio A. Supplementazione con vitamina D: meglio giornaliera o con boli? *VitaminD UpDates* 2021;4:8-10. <https://doi.org/10.30455/2611-2876-2021-2>
- ³ Fassio A, Gatti D, Rossini M, et al. Effects on serum inflammatory cytokines of cholecalciferol supplementation in healthy subjects with vitamin D deficiency. *Nutrients* 2022;14:4823. <https://doi.org/10.3390/nu14224823>
- ⁴ Bertoldo F, Pancheri S, Zenari S, et al. Serum 25-hydroxyvitamin D levels modulate the acute-phase response associated with the first nitrogen-containing bisphosphonate infusion. *J Bone Miner Res* 2010;25:447-454. <https://doi.org/10.1359/jbmr.090819>

Carenza di vitamina D e Complex Regional Pain Syndrome

VITAMIN D

UpDates

2024;7(2):4-8

<https://doi.org/10.30455/2611-2876-2024-3>

Massimo Varena, Francesca Zucchi, Chiara Crotti, Raffaele Di Taranto, Francesco Orsini

UOC Osteoporosi e Malattie Metaboliche dell'Osso, ASST Gaetano Pini-CTO, Milano

Al fine di esplorare quelli che sono i possibili rapporti tra vitamina D e sindrome algodistrofica, ovvero la *Complex Regional Pain Syndrome* (CRPS) secondo l'attuale nosografia internazionale, è indispensabile porre attenzione ai reciproci rapporti che individuano nel tessuto osseo un attore fondamentale nelle dinamiche patogenetiche dell'algodistrofia¹. Oltre ai consolidati riscontri terapeutici ottenuti con farmaci il cui meccanismo d'azione prevede il tessuto osseo quale bersaglio principale, esistono tutta una serie di evidenze che depongono per un ruolo fondamentale dell'osso nell'insorgere e nel mantenimento della malattia. A prescindere dai riscontri strumentali (osteoporosi alla radiologia standard, ipercaptazione all'esame scintigrafico, edema osseo alla risonanza magnetica), gli studi epidemiologici riportano la frattura quale evento predisponente più frequente e, di conseguenza, tutte le patologie che comportano un aumento della fragilità scheletrica e quindi dell'incidenza di fratture (osteoporosi postmenopausale e senile, *Osteogenesis imperfecta*), sono gravate da un parallelo aumento di incidenza della malattia algodistrofica. A ulteriore riprova di tale nesso patogenetico, vi sono segnalazioni che dimostrano come la patologia osteoporotica sia presente nei pazienti affetti da CRPS con una prevalenza significativamente maggiore rispetto alla popolazione generale².

Il modello animale che più fedelmente riproduce la malattia umana si ottiene inducendo una frattura della tibia distale nell'animale da esperimento. Va infine citato il riscontro di un incremento dell'osteoprotegerina (OPG), molecola coinvolta nella regolazione del sistema RANK/RANKL, nelle fasi iniziali di malattia. Come precedentemente riportato, la CRPS trova in un evento traumatico che nella maggior parte dei casi comporta una frattura l'evento predisponente più frequente. Le più attendibili rilevazioni epidemiologiche³ evidenziano come il picco di incidenza nel sesso femminile e nella decade successiva alla

menopausa è verosimilmente l'epifenomeno di un analogo andamento nella popolazione generale della frattura di radio distale, ovvero l'evento fratturativo che più frequentemente si complica con una CRPS⁴. I dati di incidenza a seguito di una frattura del radio distale riportati in letteratura presentano risultati ampiamente dispersi (dall'1 al 37%) e tale variabilità è sicuramente da riferirsi ai diversi criteri diagnostici impiegati per censire tale evento. Gli studi più recenti, ovvero quelli che impiegano i criteri diagnostici adottati dall'*International Association for the Study of Pain* (IASP), ovvero i criteri di Budapest, e riconosciuti come quelli dotati delle migliori caratteristiche in termini di sensibilità e specificità, riportano un'incidenza di CRPS nel 14% dei pazienti che subiscono una frattura di radio distale⁴.

È ampiamente noto come tale tipo di frattura rappresenti l'evento clinico più precoce correlato all'osteoporosi, verificandosi mediamente 15 anni prima della frattura di femore prossimale e come rappresenti un evento predittivo di altre fratture da fragilità, segnatamente la frattura vertebrale e la frattura di femore prossimale⁵. Tra le diverse variabili cliniche individuate come predittive della frattura di radio distale va annoverata la carenza di vitamina D⁶.

Partendo quindi dalla premessa che adeguati livelli di vitamina D siano indispensabili per una buona salute scheletrica, la ricerca si è rivolta a indagare se un'ipovitaminosi D possa rappresentare il tramite attraverso cui soggetti carenti e quindi maggiormente predisposti alla frattura da fragilità, siano in qualche misura maggiormente predisposti a essere affetti da CRPS. Un ulteriore aspetto oggetto di indagine è stato quello di verificare se un'ipovitaminosi D sia, in presenza di un evento fratturativo, una condizione che, indipendentemente da altre variabili, sia in grado di favorire la comparsa della sindrome algodistrofica. Sulla base dei riscontri epidemiologici sopra citati, la frattura di radio distale (frattura di Colles)

Corrispondenza

Massimo Varena

Massimo.Varena@asst-pini-cto.it

Conflitto di interessi

Gli Autori dichiarano nessun conflitto di interessi.

How to cite this article: Varena M, Zucchi F, Crotti C, et al. Carenza di vitamina D e *Complex Regional Pain Syndrome*. *Vitamin D – Updates* 2024;7(2):4-8. <https://doi.org/10.30455/2611-2876-2024-3>

© Copyright by Pacini Editore srl



Open Access

L'articolo è open access e divulgato sulla base della licenza CC-BY-NC-ND (Creative Commons Attribuzione – Non commerciale – Non opere derivate 4.0 Internazionale). L'articolo può essere usato indicando la menzione di paternità adeguata e la licenza; solo a scopi non commerciali; solo in originale. Per ulteriori informazioni: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.it>

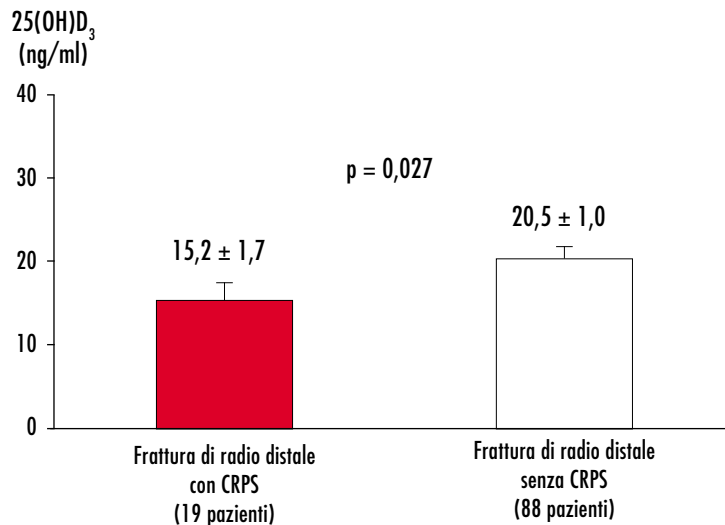


FIGURA 1.

Confronto dei valori di 25(OH)D₃ tra 19 pazienti che hanno sviluppato un'algodistrofia dopo frattura del radio distale e 88 pazienti senza algodistrofia.

ha rappresentato l'evento fratturativo che è stato più estensivamente indagato.

Nel 2020 uno studio retrospettivo condotto in ambito ortopedico su oltre un centinaio di donne postmenopausali, ha dimostrato come i soggetti che dopo una frattura di radio distale andavano incontro allo sviluppo della sindrome algodistrofica presentavano concentrazioni plasmatiche di vitamina D significativamente inferiori rispetto a coloro che non presentavano tale tipo di complicanza (Fig. 1) ⁷. È interessante sottolineare come il dosaggio di alcuni marcatori biochimici del turnover scheletrico (osteocalcina, fosfatasi alcalina), così come la valutazione densitometrica eseguita sia a livello lombare che a livello del femore prossimale, non mostravano differenze significative tra i soggetti che sviluppavano una CRPS e i soggetti che presentavano la stessa frattura e il medesimo trattamento chirurgico ma non presentavano nessun segno in senso algodistrofico. A livello speculativo i risultati di tale studio aprono le porte a una serie di possibili ipotesi di ordine patogenetico in grado di rappresentare un tramite tra bassi valori di vitamina D e insorgenza di una CRPS. In primo luogo, l'indagine densitometrica non mostra differenze significative in ragione della comparsa o meno della sindrome algodistrofica. Tale risultato consente di ipotizzare come la malattia osteoporotica definita per il tramite dell'indagine densitometrica non rappresenti per sé un fattore di rischio per la comparsa di un'algodistrofia. Le considerazioni epide-

miologiche sopra riportate sono viceversa coerenti con un ruolo indiretto dell'osteoporosi: la presenza di bassi valori di massa ossea possono essere considerati il tramite per il quale i soggetti affetti da osteoporosi andrebbero più frequentemente incontro a un evento predisponente come la frattura di radio distale, senza che la presenza di osteoporosi rappresenti un moltiplicatore della probabilità di andare incontro ad algodistrofia. Analoghe considerazioni possono essere fatte per i marcatori biochimici del metabolismo osseo: la sovrapposibilità dei risultati tra soggetti affetti da algodistrofia e i soggetti che non sviluppano la malattia tenderebbe a escludere che i livelli di turnover scheletrico rappresentino un fattore di rischio per lo sviluppo della malattia algodistrofica. Una possibile chiave interpretativa dei risultati di tale studio provengono dall'esplorazione di alcune altre segnalazioni presenti in letteratura. Un recente studio su soggetti che presentavano una frattura di radio distale, ha dimostrato che i pazienti che presentavano una frattura intra-articolare (con coinvolgimento della corticale distale del radio) presentavano al momento della frattura valori sierici di 25(OH)D₃ significativamente inferiori rispetto ai soggetti che presentavano una frattura metafisaria extra-articolare ⁸. È sufficiente incrociare questo dato con i risultati di uno studio osservazionale su circa 600 pazienti fratturati che ha esplorato i fattori predittivi della comparsa della sindrome algodistrofica ⁴ per acquisire

un riscontro suggestivo in tal senso: quale fattore di rischio per la comparsa della sindrome algodistrofica a seguito di un evento fratturativo va annoverata proprio la frattura intra-articolare e pluriframmentaria. Anche in questo caso, quindi, l'ipovitaminosi D potrebbe avere un ruolo indiretto: una situazione carenziale potrebbe essere predittiva di una frattura intra-articolare che a sua volta correla con una maggiore probabilità di sviluppare algodistrofia.

Discorso analogo potrebbe valere per l'artrite reumatoide. La presenza di tale malattia rappresenta un fattore di rischio per la comparsa di algodistrofia a seguito di un evento fratturativo ⁴ ed è ben nota l'elevata prevalenza di ipovitaminosi D nei soggetti affetti da artrite reumatoide ⁹. Infine, quale ulteriore nesso causale in grado di porre in relazione algodistrofia, frattura e ipovitaminosi D va citata la propensione alla caduta e quindi alla frattura del soggetto anziano che presenta valori di vitamina D inadeguati ¹⁰.

La malattia algodistrofica è caratterizzata da un'intensa sintomatologia dolorosa, alterazioni sensitive e vasomotorie, edema locale e deficit funzionale. Negli ultimi anni, importanti acquisizioni sono state ottenute circa i meccanismi patogenetici di malattia (Fig. 2). L'increzione locale di citochine prologogene e la liberazione retrodromica da parte di afferenti nocicettivi di mediatori neuropeptidici in grado di interferire con la regolazione del microcircolo locale, rappresentano gli eventi che innescano e mantengono la malattia, causando iperalgesia e allodinia, ovvero una percezione dolorosa sproporzionata rispetto all'intensità dello stimolo, e una percezione dolorosa a seguito di uno stimolo normalmente non in grado di evocare dolore. Successivamente, l'alterata permeabilità capillare, l'edema interstiziale e la conseguente ipossia e acidosi locale costituiscono le successive dinamiche patogenetiche in grado di mantenere le tipiche manifestazioni cliniche, ovvero l'intensa sintomatologia dolorosa, l'edema, le alterazioni del termotatto e del colorito locale ¹¹ (Fig. 3).

L'utilizzo di metodiche biochimiche estremamente sensibili e lo studio di modelli animali hanno consentito di identificare i processi di neuroflogosi quali eventi patogeneticamente connessi con le manifestazioni cliniche iniziali di malattia. In modelli murini di CRPS-1 è stata dimostrata un'elevata concentrazione locale di *Nerve Growth Factor*,

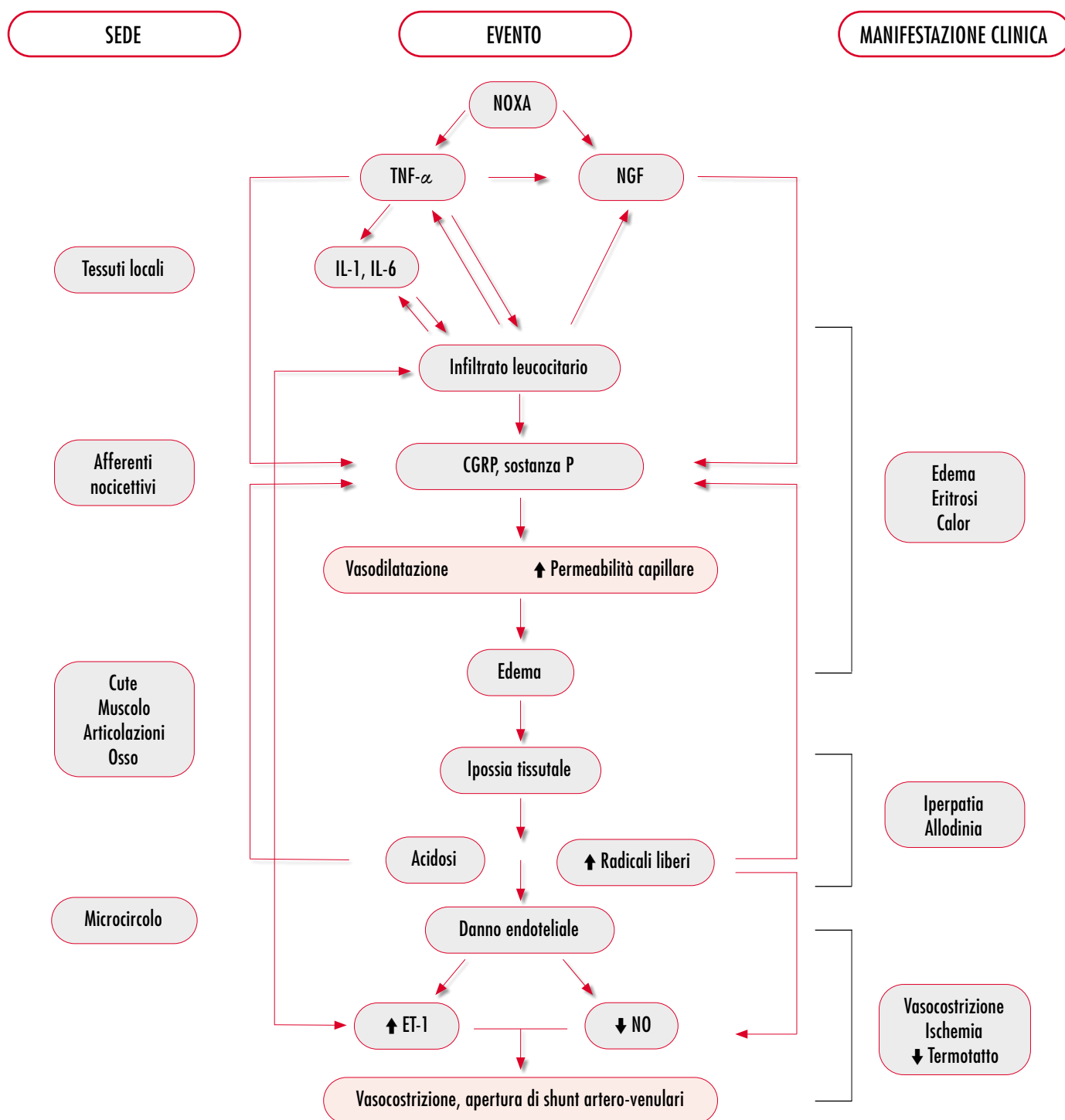
**FIGURA 2.**

Diagramma dei meccanismi patogenetici coinvolti nell'esordio e nel mantenimento della CRPS-I e delle conseguenti manifestazioni cliniche.

potenzialmente implicato nei meccanismi di genesi e trasmissione del dolore e nell'induzione della produzione citochinica locale. È un dato definitivamente acquisito che alcune citochine proinfiammatorie, quali il *Tumor Necrosis*

Factor-α (TNF α), l'interleuchina-1 (IL-1) e l'interleuchina-6 (IL-6), siano localmente presenti in concentrazioni elevate durante le prime fasi di malattia, così come alcuni studi ne dimostrano concentrazioni elevate anche

a livello sistemico. Vi sono inoltre evidenze di come il rilascio locale di alcune citochine proinfiammatorie sia mediato anche dal coinvolgimento dei cheratinociti dei piani cutanei, evento questo che può giustificare il



FIGURA 3.

Immagini di sindrome algodistrofica con interessamento della mano e del piede. È evidente l'intenso quadro flogistico apprezzabile nelle fasi iniziali di malattia.

quadro clinico intensamente flogistico tipico della malattia al suo esordio.

Con queste premesse e ad avvalorare i riscontri epidemiologici e clinici precedentemente riportati, vanno considerate altre possibili dinamiche patogenetiche che possono porre in relazione la sindrome algodistrofica con la vitamina D. Tutto ciò a prescindere dal ruolo principale di tale vitamina, ovvero quello connesso con il sistema regolatorio del metabolismo minerale e che collega stati carenziali con un aumento della fragilità scheletrica e del rischio di frattura. Il rischio di contrarre malattie neurologiche caratterizzate da un processo flogistico (neuroflogosi) sembra essere influenzato dai valori plasmatici di vitamina D, così come il loro decorso risulta essere maggiormente gravato da fasi di attivazione in caso di valori inadeguati di vitamina D¹².

A ulteriore riprova di un possibile ruolo patogenetico nei confronti dello sviluppo di algodistrofia, va considerata quella che può essere l'influenza di tale vitamina sulla produzione endogena di citochine proflogistiche. Nel 2014 è stato pubblicato uno studio osservazionale su 957 soggetti ultrasessantenni che, oltre al dosaggio della 25(OH)D₃, sono stati indagati valutando le concentrazioni plasmatiche di alcune ci-

tochine¹³. I livelli plasmatici di IL-6 erano significativamente superiori nei soggetti con valori di vitamina D inferiori a 25 nmol/L rispetto a coloro che presentavano valori normali (> 75 nmol/L). Va qui ricordato che l'IL-6 è una delle citochine la cui concentrazione risulta aumentata sia localmente, in sede di malattia, che a livello sistemico in corso di algodistrofia. Analogo riscontro è stato osservato anche per un'altra citochina proflogogena coinvolta nella patogenesi dell'algodistrofia, ovvero il TNF α . In 69 donne sane di età compresa tra i 25 e gli 82 anni la concentrazione plasmatica della 25(OH)D₃ è risultata inversamente correlata con i livelli di TNF α ¹⁴, citochina anch'essa coinvolta nella patogenesi della sindrome algodistrofica. A ulteriore riprova di un possibile nesso causale tra i livelli di vitamina D e i livelli di citochine proflogogene, sono stati pubblicati studi che dimostrano come la supplementazione vitaminica è in grado di ridurre la concentrazione plasmatica di TNF α , IL-1 e IL-6¹⁵.

Alla luce di tutti i riscontri di letteratura fin qui presi in considerazione, è opportuno che alcune considerazioni finali vadano riportate circa le dinamiche che regolano i rapporti tra la vitamina D e la sindrome algodistrofica.

Non esiste a tutt'oggi alcun riscontro che identifichi nella supplementazione con metaboliti della vitamina D una strategia da adottare nel trattamento della sindrome algodistrofica.

Esistono tuttavia dimostrazioni di come situazioni carenziali di vitamina D siano in grado di favorire un aumento di incidenza della malattia algodistrofica. Tale relazione trova il suo razionale nelle seguenti dinamiche patogenetiche:

- situazioni carenziali di vitamina D sono in grado di determinare un aumento di incidenza di eventi fratturativi che rappresentano l'evento predisponente più tipico della malattia;
- situazioni di livelli inadeguati di vitamina D favoriscono il verificarsi di fratture intra-articolari che correlano con maggior frequenza con la comparsa di algodistrofia;
- situazioni carenziali di vitamina D correlano con un maggior rischio di caduta, favorendo in questo modo il verificarsi di fratture che, a loro volta, possono rappresentare l'innescò della malattia algodistrofica.

Circa il ruolo predisponente di situazioni

carenziali nell'amplificare le probabilità che l'evento fratturativo si complichino con la comparsa di una sindrome algodistrofica, il tramite patogenetico più verosimile potrebbe essere rappresentato da un assetto immunologico più propenso a tale evento in ragione di aumentati livelli sierici di citochine proflogogene, ovvero i mediatori responsabili dell'innescò e della fase flogistica della malattia algodistrofica. Da questo punto di vista, la supplementazione con vitamina D, in soggetti carenziali, potrebbe trovare un razionale nell'ipotesi che la normalizzazione dei livelli plasmatici di 25(OH)D₃ determinerebbe una ridotta produzione di tali mediatori della flogosi algodistrofica.

Sulla base di tali considerazioni, un aspetto sicuramente meritevole di indagini cliniche potrebbe essere rappresentato da un possibile ruolo terapeutico della somministrazione di vitamina D nei soggetti affetti da algodistrofia. A tal riguardo, disponiamo oggi di strategie terapeutiche che hanno profondamente implementato i risultati ottenibili nel trattamento della malattia. L'efficacia di molecole appartenenti alla classe dei bisfosfonati è da considerarsi un riscontro definitivo, comprovato da studi randomizzati contro placebo e da meta-analisi, ovvero dagli strumenti della "Evidence Based Medicine" dotati dei più elevati livelli di attendibilità. Tra i diversi bisfosfonati, neridronato è la molecola per la quale è stato dimostrato il più elevato e convincente profilo di efficacia, in grado di indurre una remissione di malattia in tempi brevi e mantenuta permanentemente nel tempo^{16,17}. A riprova di ciò, neridronato è l'unico bisfosfonato a disporre di una certificazione di efficacia deliberata dall'Agenzia del Farmaco e comprovata dalla specifica indicazione riportata in scheda tecnica.

Poiché il presupposto fondamentale è l'impiego di elevati dosaggi ottenibili solo per via parenterale, tali riscontri sono stati inizialmente ottenuti per il tramite della somministrazione per via venosa, il che implica il trattamento in ambiente ospedaliero con le annesse problematiche di tipo logistico. Da qui il tentativo, purtroppo mai supportato da riscontri di efficacia, di impiegare antiche molecole, disponibili anche per la somministrazione intramuscolare, con quindi la possibilità di un trattamento più rapido e gestibile in ambiente domiciliare. A fronte dell'assenza di riscontri di efficacia impiegando molecole quali il clodronato che, per caratteristiche farmacocinetiche e

farmacodinamiche, non è in grado di esercitare un'accettabile azione terapeutica quando somministrato per via intramuscolare, sono recentemente comparsi in letteratura studi che viceversa documentano per il neridronato una sostanziale analogia di efficacia tra la somministrazione endovenosa e quella intramuscolare^{17,18}. A riprova di tale equivalenza, è la recente certificazione AIFA che ha conferito al neridronato l'indicazione per il trattamento dell'algodistrofia anche al farmaco somministrato per via intramuscolare¹⁹.

Pur a fronte dell'elevato profilo di efficacia degli schemi terapeutici che prevedono l'impiego di neridronato parenterale, potrebbe essere un interessante spunto di ricerca l'indagine circa un beneficio aggiuntivo o più rapido quando insieme al bisfosfonato, venga contestualmente utilizzata una supplementazione con vitamina D. Ciò tuttavia in considerazione che sia per il neridronato che per un ipotetico ruolo terapeutico della vitamina D, la condizione essenziale è quella di somministrare il trattamento nelle fasi precoci di malattia, ovvero quando le dinamiche patogenetiche legate all'aumento di concentrazione locale di citochine proinfiammatorie innesca e mantiene le manifestazioni cliniche di malattia.

Bibliografia

- 1 Varena M, Crotti C. Bisphosphonates in the treatment of complex regional pain syndrome: is bone the main player at early stage of the disease? *Rheumatol Int* 2018;38:1959-1962. <https://doi.org/10.1007/s00296-018-4101-6>
- 2 de Mos M, Huygen F, Dieleman JP, et al. Medical history and the onset of complex regional pain syndrome (CRPS). *Pain* 2008;139:458-466. <https://doi.org/10.1016/j.pain.2008.07.002>
- 3 de Mos M, de Bruijn AG, Huygen FJ, et al. The incidence of complex regional pain syndrome: a population-based study. *Pain* 2007;129:12-20. <https://doi.org/10.1016/j.pain.2006.09.008>
- 4 Beerhuizen, A, Stronks, D.L, Van't Spijker, et al. Demographic and medical parameters in the development of complex regional pain syndrome type 1 (CRPS1): prospective study on 596 patients with a fracture. *Pain* 2012;153:1187-1192. <https://doi.org/10.1016/j.pain.2012.01.026>
- 5 Mallmin H, Ljunghall S, Persson I, et al. Fracture of the distal forearm as a forecaster of subsequent hip fracture: a population based cohort study with 24 years of follow-up. *Calcif Tissue Int* 1993;52:269-272. <https://doi.org/10.1007/BF00296650>
- 6 Oyen J, Apalset EM, Gjesdal CG, et al. Vitamin D inadequacy is associated with low-energy distal radius fractures: a case-control study. *Bone* 2011;48:1140-1145. <https://doi.org/10.1016/j.bone.2011.01.021>
- 7 Sang-Uk L, Ki-Tae N, Yoon-Min L, et al. Low vitamin D levels in post-menopausal women are associated with complex regional pain syndrome type I in surgically treated distal radius fractures. *J Orthop Surg Res* 2020;15:328-335. <https://doi.org/10.1186/s13018-020-01859-4>
- 8 Abe S, Kashii M, Shimada T, et al. Relationship between distal radius fracture severity and 25-hydroxyvitamin-D level among perimenopausal and postmenopausal women. *Bone Jt Open* 2022;3:261-267. <https://doi.org/10.1302/2633-1462.33.BJO-2022-0004.R1>
- 9 Rossini M, Maddali Bongi S, La Montagna G et al. Vitamin D deficiency in rheumatoid arthritis: prevalence, determinants and associations with disease activity and disability. *Arthritis Res Ther* 2010;12:R216. <https://doi.org/10.1186/ar3195>
- 10 Rizzoli R, Bruyere O, Cannata-Andia JB, et al. Management of osteoporosis in the elderly. *Curr Med Res Opin* 2009;25:2373-2387. <https://doi.org/10.1185/03007990903169262>
- 11 Varena M, Zucchi F. Algodystrophy: recent insight into the pathogenic framework. *Clin Cases Miner Bone Metab* 2015;12:27-30. <https://doi.org/10.11138/ccmbm/2015.12.1.027>
- 12 Koduah P, Paul F, Dörr J-M. Vitamin D in the prevention, prediction and treatment of neurodegenerative and neuroinflammatory diseases. *EPMA J* 2017;8:313-325. <https://doi.org/10.1007/s13167-017-0120-8>
- 13 Laird E, McNulty H, Ward W, et al. Vitamin D deficiency is associated with inflammation in older irish adults. *J Clin Endocrinol Metab* 2014;99:1807-1815. <https://doi.org/10.1210/jc.2013-3507>
- 14 Peterson CA, Heffernan ME. Serum tumor necrosis factor-alpha concentrations are negatively correlated with serum 25(OH)D concentrations in healthy women. *J Inflamm (Lond)* 2008;5:10. <https://doi.org/10.1186/1476-9255-5-10>
- 15 Inanir A, Ozoran K, Tutkak H, et al. The effects of calcitriol therapy on serum interleukin-1, interleukin-6 and tumour necrosis factor-alfa concentrations in post-menopausal patients with osteoporosis. *J Int Med Res* 2004;32:570-582. <https://doi.org/10.1177/147323000403200602>
- 16 Varena M, Adami S, Rossini M, et al. Treatment of complex regional pain syndrome type I with neridronate: a randomized, double-blind, placebo-controlled study. *Rheumatology* 2013;52:534-542. <https://doi.org/10.1093/rheumatology/kes312>
- 17 Varena M, Gatti D, Zucchi F, et al. Long-term efficacy and safety of neridronate treatment in patients with complex regional pain syndrome type 1: a pre-specified, open-label, extension study. *Ther Adv Musculoskel Dis* 2022;14. <https://doi.org/10.1177/1759720X221142274>
- 18 Varena M, Braga V, Gatti D, et al. Intramuscular neridronate for the treatment of complex regional pain syndrome type 1: a randomized, double-blind, placebo-controlled study. *Ther Adv Musculoskel Dis* 2021;13. <https://doi.org/10.1177/1759720X211014020>
- 19 G.U. Determina 77/2024. Anno 165; N. 78: 3/4/2024.

La carenza di vitamina D in età pediatrica: un problema che viene da lontano ma che riemerge

Diego Peroni

Dipartimento di Medicina Clinica e Sperimentale, sezione di Pediatria, Università di Pisa; Direttore U.O. di Pediatria, AOUP, Pisa

LE PREMESSE, PERCHÉ C'È IL RISCHIO

La carenza di vitamina D in età pediatrica costituisce un problema sanitario con risvolti sociali che possiamo considerare non risolto. Infatti, la vitamina D rappresenta un fattore fondamentale per lo sviluppo del sistema muscolo-scheletrico ed è al centro del processo di crescita del bambino. L'azione classica della vitamina D durante l'età pediatrica è proprio quella di favorire una corretta formazione della massa ossea. La vitamina D viene prodotta per il 90-95% dall'esposizione solare e soltanto per il 5-10% assicurata dall'assunzione con alimenti^{1,2}. Questa situazione diventa critica se l'esposizione solare non viene ad essere garantita nei modi e tempi adeguati; ciò può portare a situazioni rilevanti di difetto dei livelli della vitamina D. A questo proposito, uno studio inglese, valutando i dati di prevalenza del rachitismo da deficit di vitamina D, ha rilevato che i casi di rachitismo segnalati in quel paese sono aumentati particolarmente nell'ultimo decennio³. Questo è stato attribuito al fatto che probabilmente è cambiata profondamente la componente etnica della popolazione che vive in Inghilterra. La popolazione con colorito della pelle più scuro è aumentata notevolmente, determinando un rischio maggiore in quel Paese, dove la supplementazione, anche nel primo anno di vita, non è consigliata fortemente. Il fototipo scuro infatti non permette un assorbimento completo mediante l'esposizione solare e necessita di una supplementazione³.

La carenza di vitamina D peraltro è possibile anche in altri Paesi come il nostro dove, anche se l'esposizione al sole è molto più presente, l'aumento del numero di bambini di pelle scura è stato marcato nell'ultimo decennio. Mentre in alcuni paesi del Nord Europa viene applicata una politica di supplementazione negli alimenti della vitamina D (fortificazione degli alimenti) con una diminuzione significativa e diffusa del rischio, nel nostro

Paese la mancata supplementazione può aumentare l'incidenza di ipovitaminosi. Anche in Italia e negli altri paesi dell'area mediterranea quindi, questo può costituire un fattore di rischio importante e socialmente rilevante per ipovitaminosi D⁴. A tal proposito diverse società scientifiche hanno stabilito i dosaggi raccomandati ed i tempi di somministrazione della vitamina D per un accrescimento osseo adeguato². Questo vale anche nel corso del primo anno di vita quando la somministrazione è fortemente consigliata ma che in alcune situazioni può trovare una compliance alla somministrazione non adeguata con un aumento sensibile del rischio. Tale rischio si può concretizzare anche in altre fasi della vita pediatrica².

IPOVITAMINOSI D: I FATTORI DI RISCHIO

Il rischio di carenza di vitamina D in età pediatrica è spesso dovuto ad alcuni fattori determinanti:

1. alla latitudine: più ci allontaniamo dall'equatore, minore è la quantità di irraggiamento solare disponibile ed utile per aumentare i livelli di vitamina D;
2. all'etnia: il colore della pelle scuro determina un ostacolo alla formazione della vitamina D mediante irraggiamento;
3. a fattori culturali, per esempio, la copertura estrema per motivi religiosi della madre durante la gravidanza determina un rischio di grave ipovitaminosi;
4. alla dieta che può giocare un ruolo determinante, se viene limitata l'assunzione o l'assorbimento di prodotti alimentari che contengono la vitamina.

Nel corso del primo anno di vita la profilassi con 400 UI/die viene eseguita in tutti i lattanti perché tale supplementazione è riconosciuta necessaria per la prevenzione del rachitismo. Le scorte di vitamina D del neonato sono direttamente proporzionali allo stato vitaminico materno, spesso scarse; il neonato e il lattante

Corrispondenza

Diego Peroni

diego.peroni@unipi.it

Conflitto di interessi

L'Autore dichiara nessun conflitto di interessi.

How to cite this article: Peroni D. La carenza di vitamina d in età pediatrica: un problema che viene da lontano ma che riemerge. *Vitamin D – Updates* 2024;7(2):9-12. <https://doi.org/10.30455/2611-2876-2024-4>

© Copyright by Pacini Editore srl



Open Access

L'articolo è open access e divulgato sulla base della licenza CC-BY-NC-ND (Creative Commons Attribuzione – Non commerciale – Non opere derivate 4.0 Internazionale). L'articolo può essere usato indicando la menzione di paternità adeguata e la licenza; solo a scopi non commerciali; solo in originale. Per ulteriori informazioni: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.it>

vengono scarsamente esposti al sole e la velocità di crescita staturale-ponderale certamente particolarmente elevata. Inoltre, il latte materno e l'eventuale latte di formula contengono delle quantità di vitamina D spesso non sufficienti. Sebbene la supplementazione nel corso del primo anno sia molto consigliata dai pediatri, per una serie di situazioni le mamme possono ad un certo punto interromperla o essere poco costanti nella somministrazione. Uno studio americano ha evidenziato che spesso il motivo della interruzione era dovuto al fatto di considerare che la vitamina D fosse presente anche nel latte formulato, si trovasse anche in altri alimenti introdotti con lo svezzamento, il bambino venisse considerato già sufficientemente grande ⁴.

Sono state riportate delle condizioni di rischio di deficit che riguardano anche il bambino di età maggiore ai 12 mesi di vita ¹, dovute spesso a regimi dietetici inadeguati: per esempio, una dieta ricca in fitati (questo anti-nutriente, che si trova principalmente in semi, cereali, fagioli e legumi, riduce l'assorbimento di calcio, magnesio e zinco durante la digestione, diminuendone in questo modo l'assimilazione da parte dell'organismo umano), ostacola l'assorbimento della vitamina D ². Situazioni di rischio sono dovute a patologie croniche come l'insufficienza epatica cronica e l'insufficienza renale cronica, ma anche l'obesità che costituisce certamente un altro problema sociale e sanitario. La vitamina D è sequestrata dal tessuto grasso e resa non disponibile, abbassando sensibilmente i livelli nel soggetto sovrappeso. Questa situazione che si stima sia presente nel 30% della nostra popolazione pediatrica può costituire un fattore di rischio tra i più importanti per ipovitaminosi D. Vi sono inoltre delle patologie da malassorbimento, come la fibrosi cistica, le malattie infiammatorie intestinali croniche, la celiachia non diagnosticata, che vanno ad ostacolare l'assorbimento della vitamina D. Anche alcuni farmaci, assunti in maniera continuativa per patologie croniche come antiepilettici, fenobarbital, fenitoina, corticosteroidi per via sistemica, farmaci antiretrovirali, antimicotici per via sistemica rappresentano fattori di rischio per ipovitaminosi. Infine, costituiscono un fattore di rischio anche una serie di situazioni come l'immobilizzazione prolungata dovuta, per esempio, a paralisi cerebrale o a malattie neuromuscolari o neurodegenerative ².

LA VITAMINA D E LE AZIONI EXTRA SCHELETRICHE

Alla vitamina D, specie in età pediatrica, vengono attribuite anche una serie di azioni extra scheletriche, oggetto di continuo dibattito. Molti autori considerano la vitamina D come un ormone pleiotropico: la presenza della vitamina D e l'attivazione dei recettori della vitamina D in cellule diverse, ha degli effetti di omeostasi su diversi organi ed apparati. I recettori della vitamina D sono presenti nelle diverse cellule che costituiscono il sistema immunitario, influenzando sia la componente innata che adattativa ⁵. La vitamina D è in grado di interagire sia con i monociti, macrofagi, cellule dendritiche (sistema immunitario innato), ma anche con i linfociti T (sistema immunitario adattativo), modulando la risposta immunologica del bambino. Momenti diversi e successivi di ipovitaminosi D espongono il bambino, che può avere anche altri fattori di rischio, a sviluppare una sensibilizzazione allergica e poi asma bronchiale. Inoltre, altri dati della letteratura confermano che esiste una relazione tra funzionalità respiratoria e livelli di vitamina D. Ciò è evidente già durante la gravidanza: mamme con bassi livelli sierici di vitamina D durante la gestazione partoriscono bambini che presentano una funzionalità polmonare ridotta. Questo rappresenta un fattore di rischio per sviluppare *wheezing* ed ostruzione bronchiale con particolare facilità nei primi mesi di vita ⁶. La vitamina D è in grado di modificare in maniera significativa anche l'effetto di alcuni fattori prognosticamente negativi per la funzionalità polmonare del neonato, come l'esposizione al fumo di sigaretta. Se la mamma fuma durante la gravidanza, il fatto che abbia dei livelli di vitamina D corretti, rappresenta un fattore protettivo che sembra neutralizzare l'effetto negativo dell'esposizione al fumo sullo sviluppo polmonare ⁷.

SUPPLEMENTAZIONE ED EFFETTI EXTRA SCHELETRICI

Nella controversia sul ruolo extra scheletrico della vitamina D, si inseriscono dati discordanti sugli effetti di salute della supplementazione. Un'ampia recente revisione della letteratura, effettuata da endocrinologi, ha evidenziato effetti molto scarsi sulla salute della supplementazione con vitamina D. Non emergono dati a favore della supplementazione per una serie di patologie come il diabete, il cancro, le malattie autoimmuni, la sclerosi multipla, l'asma ⁸. Allo stesso

tempo però, sono state pubblicate anche altre metanalisi sugli effetti della supplementazione di vitamina D sull'asma durante l'età pediatrica con risultati più favorevoli. Se la supplementazione con vitamina D non è in grado di ridurre il numero delle riacacerbazioni di asma in tutti i bambini asmatici, il rischio di avere asma può essere ridotto nei bambini che hanno abitualmente (vedi fattori di rischio) dei livelli di vitamina D particolarmente bassi, cioè al di sotto dei 10 ng/ml ⁹. In un'altra revisione molto recente, dove è stato valutato l'utilizzo della vitamina D per il management dell'asma, gli autori non trovano grosse evidenze per effetto della supplementazione della vitamina D o dei suoi metaboliti nel ridurre il rischio di riacacerbazioni dell'asma. Peraltro, proprio i pazienti più a rischio, che sono quelli che hanno un'asma severa e che presentano dei livelli di vitamina D particolarmente bassi, sono poco rappresentati negli studi oggetto della revisione. Se ne ricava che dal punto di vista pratico il bambino asmatico che dobbiamo considerare più a rischio (asma moderata severa e che presenta dei fattori di rischio per ipovitaminosi D), può giovare della supplementazione con vitamina D ¹⁰. La supplementazione durante la gravidanza non sembra essere in grado di prevenire l'asma nel bambino in età scolare, anche se, dati di un trend di efficacia si sono avuti per quel che riguarda la prevenzione del *wheezing* o broncospasmo in età prescolare. Ai tre anni, infatti, vi era una tendenza, peraltro al limite della significatività, nella coorte con supplementazione, per una maggiore protezione dagli episodi di *wheezing* e di broncospasmo. Questo dato è stato recentemente confermato in un'analisi sulla stessa coorte, attribuendolo all'effetto della vitamina già dalla gravidanza sulla funzionalità polmonare e sul sistema immunitario ¹¹.

VITAMINA D E OBESITÀ

Esiste chiaramente anche una relazione tra vitamina D e sindrome metabolica: il 30% dei bambini nel nostro Paese è in sovrappeso e di questi, molti sono obesi. La deficienza di vitamina D sembra influenzare ed essere influenzata dalla sindrome metabolica e dall'obesità. I livelli acquisiti con la supplementazione di vitamina D nel bambino sono condizionati proprio dal peso o meglio dal *body mass index* (BMI) del bambino. In altri termini, supplementare un bambino di peso normale oppure uno con sovrappeso o obesità può dare dei risultati diversi in termini di

TABELLA II.

Fabbisogni giornalieri di vitamina D raccomandati tra 1-18 anni (da Peroni, 2022) ¹⁴.

Età	IOM 2011 e AAP 2012			LARN 2012			Endocrine Society 2011	
	EAR, UI/die	RDA, UI/die	UL, UI/die	EAR, UI/die	RDA, UI/die	UL, UI/die	Fabbisogno giornaliero, UI/die	UL, UI/die
1-3 anni	400	600	2.500	400	600	2.000	600-1.000	4.000
4-8 ani	400	600	3.000	400	600	2.000 (4-10 anni)	600-1.000	4.000
9-18 anni	400	600	4.000	400	600	4.000 (11-18 anni)	600-1.000	4.000

EAR: *Estimate Average Requirement* (fabbisogno medio: apporto stimato in grado di coprire i fabbisogni del 50% della popolazione); RDA: *Recommended Dietary Allowances* (assunzione raccomandata per la popolazione: apporto stimato in grado di coprire i fabbisogni di oltre il 97,5% della popolazione); UL: *Tolerable Upper Intake levels* (livello massimo tollerabile di assunzione: apporto al di sopra del quale è possibile l'insorgenza di eventi avversi). * Fabbisogni consigliati per i soggetti a rischio di deficit di vitamina D.

raggiungimento di livelli sierici di vitamina D soddisfacenti. Uno studio ha evidenziato come la supplementazione con dosi convenzionali di vitamina D non sia efficace per modificare i livelli di vitamina D sierici nel paziente obeso ¹². Questo studio ha dimostrato che i bambini con obesità hanno una maggiore resistenza, in termini di mancata risposta, alla supplementazione con vitamina D. Inoltre, un lavoro ha dimostrato come vi sia un effetto condizionante determinato dall'associazione tra BMI e livelli di vitamina D sulla meccanica respiratoria nel soggetto con asma lieve. Infatti, nel soggetto di peso normale livelli corretti di vitamina D erano associati ad una funzionalità respiratoria decisamente più adeguata, cosa che non era evidente in caso di sovrappeso ¹³.

COME SUPPLEMENTARE LA VITAMINA D IN ETÀ PEDIATRICA?

I dosaggi proposti variano molto ed è importante rifarsi alle dosi che sono consigliate dalle linee guida nazionali e internazionali ^{2,14}. Solo la supplementazione o la fortificazione degli alimenti fanno la differenza nel mantenimento di livelli adeguati specie nelle categorie dei bambini a rischio. La sola esposizione solare non fa spesso la differenza a tutte le età pediatriche. Infatti, uno studio del 2018 ha dimostrato che soltanto la supplementazione aumenta in maniera significativa ed efficace i livelli di vitamina D nella popolazione pediatrica e nelle gravide ¹⁵.

Un punto rilevante ormai chiarito è che le dosi debbono essere assunte quotidianamente e non in bolo (mensile o settimanale). Vi è una spiegazione biologicamente plausibile a questo, che alte dosi in bolo

unico possono indurre l'espressione a lungo termine di enzimi del catabolismo della vitamina D che hanno la capacità di inattivare la vitamina somministrata in grosse quantità ¹⁶. Quindi è importante supplementare in maniera giornaliera, costante, precisa, per evitare meccanismi di questo genere. Questo era stato già segnalato nel 2013 in una revisione della letteratura, dove la valutazione del rischio per lo sviluppo di patologie del tratto respiratorio in età pediatrica era ridotto in maniera più significativa nei casi in cui la quantità era somministrata in dose quotidiana e non in bolo ^{17,18}.

CHE DOSAGGI DI SUPPLEMENTAZIONE?

Dobbiamo considerare che la supplementazione è importante per raggiungere dei livelli sierici adeguati (Tab. I). È rilevante per quel che riguarda lo sviluppo di una corretta massa ossea; l'osteoporosi è una patologia che secondo molti inizia in età pediatrica. Quindi assicurare un apporto di vitamina D e di calcio appropriati fin dalle prime fasi della vita è essenziale. Si crea una massa ossea che costituisce un vero e proprio tesoro per le età successive della vita. Peraltro, per raggiungere livelli di vitamina D efficaci per le funzioni extra ossee è probabilmente necessario raggiungere livelli sierici maggiori di quelli che consideriamo utili alla salute dell'osso. Nella prima infanzia tutti i bambini dovrebbero ricevere nei primi 12 mesi di vita, ma probabilmente anche nel corso dei primi 24 mesi di vita, una supplementazione adeguata: 400 e poi 600 unità di vitamina D. Nella seconda e terza infanzia, è importante sottoporre a profilassi con

vitamina D i bambini e adolescenti che presentano fattori di rischio di deficit di vitamina D. Lo stile di vita fa la differenza: se il soggetto, bambino o adolescente vive e gioca molto spesso all'aria aperta e mangia in maniera varia, l'esposizione alla luce solare e la dieta assicurano anche un buon assorbimento di vitamina D. Durante i mesi invernali, vale la pena supplementare la vitamina D, considerando ancora una volta la presenza di fattori di rischio come la mancata esposizione solare, il sovrappeso e l'obesità. L'apporto giornaliero sarà di 400 unità giornaliere nel corso del primo anno di vita, per poi variare dalle 600 alle 1000 unità/die. Il soggetto che presenta dei livelli molto bassi di vitamina D, e con una situazione carenziale clinicamente evidente, ha bisogno certamente di maggiori livelli di supplementazione di vitamina D ².

CONCLUSIONI

I livelli di vitamina D possono essere particolarmente bassi a tutte le età pediatriche, specie in presenza di fattori di rischio. La fortificazione degli alimenti è una situazione che, a livello di popolazione, nei Paesi dove la vitamina D è sempre stata particolarmente bassa, per esempio per scarso irraggiamento, ha contribuito a risolvere problematiche di salute come il rachitismo ^{17,18}. Ma il problema non è risolto: questo approccio insieme con la supplementazione quotidiana va considerato perché, cambiati i fattori di rischio, con più bambini di pelle scura, cambiati gli stili di vita, il rischio di ipovitaminosi D è aumentato. Anche nei bambini del nostro Paese sono aumentati i casi a rischio e più vulnerabili e per questo motivo gli effetti della vitamina D e l'eventuale supplementazione

tazione dovrebbero essere particolarmente attenzionati e consigliati.

Bibliografia

- 1 Gil Á, Plaza-Diaz J, Mesa MD. Vitamin D: classic and novel actions. *Ann Nutr Metab* 2018;72:87-95. <https://doi.org/10.1159/000486536>
- 2 Saggese G, Vierucci F, Prodam F, et al. Vitamin D in pediatric age: consensus of the Italian Pediatric Society and the Italian Society of Preventive and Social Pediatrics, jointly with the Italian Federation of Pediatricians. *Ital J Pediatr* 2018;44:51. <https://doi.org/10.1186/s13052-018-0488-7>
- 3 Uday S, Högler W. Prevention of rickets and osteomalacia in the UK: political action overdue. *Arch Dis Child*. 2018;103:901-906. <https://doi.org/10.1136/archdischild-2018-314826>
- 4 Umaretiya PJ, Oberhelman SS, Cozine EW, et al. Maternal preferences for vitamin D supplementation in breastfed infants. *Ann Fam Med* 2017;15:68-70. <https://doi.org/10.1370/afm.2016>
- 5 Gröber U, Spitz J, Reichrath J, et al. Vitamin D: Update 2013: From rickets prophylaxis to general preventive healthcare. *Dermatoendocrinology* 2013;5:331-347. <https://doi.org/10.4161/derm.26738>
- 6 Hanna M. Knihtilä, PhD, Mengna Huang, et al. Maternal vitamin D status modifies the effects of early life tobacco exposure on child lung function. *Allergy Clin Immunol* 2023;151:556-564. <https://doi.org/10.1016/j.jaci.2022.10.030>
- 7 Knihtilä HM, Stubbs BJ, Carey VJ, et al. Low gestational vitamin D level and childhood asthma are related to impaired lung function in high-risk children. *J Allergy Clin Immunol* 2021;148:110-119.e9. <https://doi.org/10.1016/j.jaci.2020.12.647>
- 8 Bouillon R, Manousaki D, Rosen C, et al. The health effects of vitamin D supplementation: evidence from human studies. *Nat Rev Endocrinol* 2022;18:96-110. <https://doi.org/10.1038/s41574-021-00593-z>
- 9 Li Q, Zhou Q, Zhang G, Tian X, et al., Vitamin D supplementation and allergic diseases during childhood: a systematic review and meta-analysis. *Nutrients* 2022;14:3947. <https://doi.org/10.3390/nu14193947>
- 10 Williamson A, Martineau AR, Sheikh A, et al. Vitamin D for the management of asthma. *Cochrane Database Syst Rev*. 2023;2:CD011511. <https://doi.org/10.1002/14651858.CD011511.pub3>
- 11 Weiss ST, Mirzakhani H, Carey VJ, et al. Prenatal vitamin D supplementation to prevent childhood asthma: 15-year results from the Vitamin D Antenatal Asthma Reduction Trial (VDAART). *J Allergy Clin Immunol* 2024;153:378-388. <https://doi.org/10.1016/j.jaci.2023.10.003>
- 12 Tobias DK, Luttmann-Gibson H, Mora S, et al. Association of body weight with response to vitamin D supplementation and metabolism. *JAMA Netw Open* 2023;6:e2250681. <https://doi.org/10.1001/jamanetworkopen.2022.50681>
- 13 Papamichael MM, Itsiopoulos C, Katsardis C, et al. Does BMI Modify the association between vitamin D and pulmonary function in children of the mild asthma phenotype? *Int J Environ Res Public Health* 2022;19:16768. <https://doi.org/10.3390/ijerph192416768>
- 14 Peroni D. Update sul ruolo della vitamina D nel sistema immunitario in età pediatrica. *Il Medico Pediatra* 2022;31(3):15-20. <https://doi.org/10.36179/2611-5212-2022-12>
- 15 Moyersoel I, Lachat C, Cuypers K, et al. Do current fortification and supplementation programs assure adequate intake of fat-soluble vitamins in Belgian infants, toddlers, pregnant women, and lactating women? *Nutrients* 2018;10:223. <https://doi.org/10.3390/nu10020223>
- 16 Griffin G, Hewison M, Hopkin J, et al. Perspective: vitamin D supplementation prevents rickets and acute respiratory infections when given as daily maintenance but not as intermittent bolus: implications for COVID-19. *Clin Med (Lond)* 2021;21:e144-e149. <https://doi.org/10.7861/clinmed.2021-0035>
- 17 Bergman P, Lindh AU, Björkhem-Bergman L, et al. Vitamin D and respiratory tract infections: a systematic review and meta-analysis of randomized controlled trials. *PLoS One* 2013;8:e65835. <https://doi.org/10.1371/journal.pone.0065835>
- 18 Roth DE, Abrams SA, Aloia J, et al. Global prevalence and disease burden of vitamin D deficiency: a roadmap for action in low- and middle-income countries. *Ann N Y Acad Sci* 2018;1430:44-79. <https://doi.org/10.1111/nyas.13968>

CARDIOLOGIA

- Abouzid M, Burchardt P, Kagan L, et al. Associations between vitamin D status, VDR gene polymorphisms and echocardiographic markers in Polish patients with cardiovascular disease. *Future Cardiol.* 2024 Apr 10. <https://doi.org/10.2217/fca-2023-0129>. Online ahead of print. PMID: 38597392
- Adeniyi OV, Masilela C, George JA. Prevalence of vitamin D deficiency and its association with cardiometabolic risk factors among healthcare workers in the Eastern Cape province, South Africa; cross-sectional study. *Sci Rep.* 2024 Feb 27;14(1):4756. <https://doi.org/10.1038/s41598-024-54977-y>. PMID: 38413628
- Aleksova A, Janjusevic M, Zhou XNO, et al. Persistence of vitamin D deficiency among Italian patients with acute myocardial infarction. *Nutr Metab Cardiovasc Dis.* 2024 May;34(5):1283-1294. <https://doi.org/10.1016/j.numecd.2024.02.007>. Epub 2024 Feb 22. PMID: 38494368
- Alirezai T, Ansari Aval Z, Karamian A, et al. Effect of preoperative vitamin D on postoperative atrial fibrillation incidence after coronary artery bypass grafting. *Gen Thorac Cardiovasc Surg.* 2024 Mar 15. <https://doi.org/10.1007/s11748-024-02020-2>. Online ahead of print. PMID: 38485852
- Altin H, Şen E, Bozdemir ŞE, et al. Evaluation of the Effect of Vitamin D Treatment on Cardiac Function in Non-Obese Female Adolescents with Vitamin D Deficiency in Türkiye: A Cross-Sectional Study. *Niger J Clin Pract.* 2024 Feb 1;27(2):194-201. https://doi.org/10.4103/njcp.njcp_721_23. Epub 2024 Feb 26. PMID: 38409147
- Fiaz H, Khan AR, Abbas S, et al. Association of vitamin D receptor polymorphisms with cardiometabolic conditions in Pakistani population. *Int J Vitam Nutr Res.* 2024 Feb;94(1):45-53. <https://doi.org/10.1024/0300-9831/a000772>. Epub 2022 Dec 15. PMID: 36520094
- Gaengler S, Sadlon A, De Godoi Rezende Costa Molino C, et al. Effects of vitamin D, omega-3 and a simple strength exercise programme in cardiovascular disease prevention: The DO-HEALTH randomized controlled trial. *J Nutr Health Aging.* 2024 Feb;28(2):100037. <https://doi.org/10.1016/j.jnha.2024.100037>. Epub 2024 Jan 9. PMID: 38199870
- Gereke Uludag DM, Aydogan BI, Tan TS, et al. Evaluation of the Relationship Between Vitamin D Deficiency and Subclinical Cardiac Dysfunction Using 2D/3D Strain Echocardiography in Healthy People. *Kardiologija.* 2024 Feb 29;64(2):73-79. <https://doi.org/10.18087/cardio.2024.2.n2331>. PMID: 38462807
- Hu C, Yang M. Trends of serum 25(OH) vitamin D and association with cardiovascular disease and all-cause mortality: from NHANES survey cycles 2001-2018. *Front Nutr.* 2024 Feb 2;11:1328136. <https://doi.org/10.3389/fnut.2024.1328136>. eCollection 2024. PMID: 38371503
- Jiang Q, Prabakar K, Saleh SAK, et al. The Effects of Vitamin D Supplementation on C-Reactive Protein and Systolic and Diastolic Blood Pressure in Postmenopausal Women: A Meta-Analysis and Systematic Review of Randomized Controlled Trials. *J Acad Nutr Diet.* 2024 Mar;124(3):387-396.e5. <https://doi.org/10.1016/j.jand.2023.10.013>. Epub 2023 Oct 29. PMID: 38441080
- Kubra KT, Moni MA. Level of Vitamin D and Its Relation with Incident Hypertension among Bangladeshi Adults. *Mymensingh Med J.* 2024 Apr;33(2):476-485. PMID: 38557529
- Mungmuntipantip R, Wiwanitkit V. Vitamin D receptor polymorphisms and cardiometabolic conditions: Correspondence. *Int J Vitam Nutr Res.* 2024 Apr;94(2):81. <https://doi.org/10.1024/0300-9831/a000776>. Epub 2023 Jan 17. PMID: 36647632
- Nabil IK, Mahmud Z, Tamanna S, et al. Vitamin D deficiency and the vitamin D receptor (VDR) gene polymorphism rs2228570 (FokI) are associated with an increased susceptibility to hypertension among the Bangladeshi population. *PLoS One.* 2024 Mar 14;19(3):e0297138. <https://doi.org/10.1371/journal.pone.0297138>. eCollection 2024. PMID: 38483874

© Copyright by Pacini Editore srl



OPEN ACCESS

L'articolo è open access e divulgato sulla base della licenza CC-BY-NC-ND (Creative Commons Attribuzione – Non commerciale – Non opere derivate 4.0 Internazionale). L'articolo può essere usato indicando la menzione di paternità adeguata e la licenza; solo a scopi non commerciali; solo in originale. Per ulteriori informazioni: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.it>

- Riaz A, Kalsoom S, Hamza M, et al. Letter to editor: The relationship between vitamin D status and cardiovascular diseases. *Curr Probl Cardiol.* 2024 May;49(5):102511. <https://doi.org/10.1016/j.cpcardiol.2024.102511>. Epub 2024 Feb 29. PMID: 38431147
- Serra MO, de Macedo LR, Silva M, et al. Effect of Vitamin D supplementation on blood pressure in hypertensive individuals with hypovitaminosis D: a systematic review and meta-analysis. *J Hypertens.* 2024 Apr 1;42(4):594-604. <https://doi.org/10.1097/HJH.0000000000003646>. Epub 2023 Dec 18. PMID: 38164948
- Shahidi S, Komaki A, Salehi I, et al. Vitamin D Protects Against Cardiac Hypertrophy Through the Regulation of Mitochondrial Function in Aging Rats. *Rejuvenation Res.* 2024 Apr;27(2):51-60. <https://doi.org/10.1089/rej.2023.0061>. Epub 2024 Feb 20. PMID: 38308474
- Siervo M, Hussin AM, Calella P, et al. Associations between Aging and Vitamin D Status with Whole-Body Nitric Oxide Production and Markers of Endothelial Function. *J Nutr.* 2024 Feb;154(2):469-478. <https://doi.org/10.1016/j.tjnut.2023.12.002>. Epub 2023 Dec 3. PMID: 38048992
- Sparling J, Ketigian L, Qu JZ, et al. Investigation of total 25-hydroxy vitamin D concentrations and postoperative delirium after major cardiac surgery. *Br J Anaesth.* 2024 Mar 28;S0007-0912(24)00125-9. <https://doi.org/10.1016/j.bja.2024.02.026>. Online ahead of print. PMID: 38553312
- Ye H, Li Y, Liu S, et al. Association between serum 25-hydroxyvitamin D and vitamin D dietary supplementation and risk of all-cause and cardiovascular mortality among adults with hypertension. *Nutr J.* 2024 Mar 9;23(1):33. <https://doi.org/10.1186/s12937-024-00914-8>. PMID: 38459491
- Zelzer S, Meinitzer A, Enko D, et al. Classification of Vitamin D Status Based on Vitamin D Metabolism: A Randomized Controlled Trial in Hypertensive Patients. *Nutrients.* 2024 Mar 14;16(6):839. <https://doi.org/10.3390/nu16060839>. PMID: 38542750
- org/10.3233/HAB-240009. Online ahead of print. PMID: 38640148
- Charonnat C, Sanchez-Rodriguez D, Karas SN, et al. Efficiency of the Vitamin D Status Diagnosticator amongst Geriatric Patients with COVID-19. *Nutrients.* 2024 Mar 15;16(6):856. <https://doi.org/10.3390/nu16060856>. PMID: 38542767
- Çömlek FÖ, Toprak A, Birbilen AZ, et al. Evaluation of vitamin D levels in children and adolescents after the first year of the COVID-19 pandemic: 1-year results of a secondary-level state hospital. *Arch Pediatr.* 2024 Apr;31(3):179-182. <https://doi.org/10.1016/j.arcped.2023.11.001>. Epub 2024 Mar 26. PMID: 38538466
- Davenport A. Does native vitamin D, or active vitamin D modulate the neutralising antibody responses to COVID-19 vaccination in haemodialysis patients? *Int J Artif Organs.* 2024 Apr 1;3913988241241204. <https://doi.org/10.1177/03913988241241204>. Online ahead of print. PMID: 38561893
- Dilokpattanamongkol P, Yan C, Jayanama K, et al. Impact of vitamin D supplementation on the clinical outcomes of COVID-19 pneumonia patients: a single-center randomized controlled trial. *BMC Complement Med Ther.* 2024 Feb 21;24(1):97. <https://doi.org/10.1186/s12906-024-04393-6>. PMID: 38383361
- Fatima A, Kumar S, Samiullah F. Letter to the Editor: The role of vitamin D in the prevention and treatment of SARS-CoV-2 infection: A meta-analysis of randomized controlled trials. *Clin Nutr.* 2024 Feb 28;S0261-5614(24)00071-2. <https://doi.org/10.1016/j.clnu.2024.02.028>. Online ahead of print. PMID: 38431492
- Gomaa AA, Abdel-Wadood YA, Thabet RH, et al. Pharmacological evaluation of vitamin D in COVID-19 and long COVID-19: recent studies confirm clinical validation and highlight metformin to improve VDR sensitivity and efficacy. *Inflammopharmacology.* 2024 Feb;32(1):249-271. <https://doi.org/10.1007/s10787-023-01383-x>. Epub 2023 Nov 13. PMID: 37957515
- Ito A, Yamamoto S, Oshiro Y, et al. Vitamin D deficiency during the coronavirus disease 2019 (COVID-19) pandemic among healthcare workers. *Clin Nutr ESPEN.* 2024 Apr;60:210-216. <https://doi.org/10.1016/j.clnesp.2024.02.005>. Epub 2024 Feb 7. PMID: 38479912
- Nakashima A, Yamamoto I, Kobayashi A, et al. Active vitamin D analog and SARS-CoV-2 IgG after BNT162b2 vaccination in patients with hemodialysis. *Ther Apher Dial.* 2024 Mar 19. <https://doi.org/10.1111/1744-9987.14121>. Online ahead of print. PMID: 38504452
- O'Sullivan M, Moran C, Griffin TP, et al. Impact of the COVID-19 lockdown on the vitamin D status of people in the West of Ireland. *Ir J Med Sci.* 2024 Apr;193(2):1061-1071. <https://doi.org/10.1007/s11845-023-03543-y>. Epub 2023 Oct 21. PMID: 37864675
- Plasek J, Dodulik J, Gai P, et al. Mortality of hospitalized patients with COVID-19: Effects of treatment options (vitamin D, anticoagulation, isoprinosine, ivermectin) assessed by propensity score matching, retrospective analysis. *Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub.* 2024 Mar;168(1):35-43. <https://doi.org/10.5507/bp.2023.045>. Epub 2023 Dec 4. PMID: 38050692
- Rachman A, Rahmadiyah R, Khomeini A, et al. The association between vitamin D deficiency and the clinical outcomes of hospitalized COVID-19 patients. *F1000Res.* 2024 Feb 5;12:394. <https://doi.org/10.12688/f1000research.132214.3>. eCollection 2023. PMID: 38434628
- Rajendran S, Lee ZC, Seow CE, et al. Right Femoral Fragility Fracture in an Adolescent with Vitamin D Deficiency from COVID-19 Pandemic-Related Confinement. *Case Rep Endocrinol.* 2024 Mar 11;2024:8354501. <https://doi.org/10.1155/2024/8354501>. eCollection 2024. PMID: 38500707
- Regina da Silva Correa da Ronda C, Berlofa Visacri M, Tiemi Siguemoto J, et al. Single-nucleotide polymorphisms related to vitamin D metabolism and severity or mortality of COVID-19: A systematic review and meta-analysis. *Gene.* 2024 May 15;906:148236. <https://doi.org/10.1016/j.gene.2024.148236>. Epub 2024 Feb 3. PMID: 38316264
- Rizzi M, Avellis V, Messina A, et al. Vitamin D Supplementation in Neonatal and Infant MIS-C Following COVID-19 Infection. *Int J Mol Sci.* 2024 Mar 27;25(7):3712. <https://doi.org/10.3390/ijms25073712>. PMID: 38612523
- Robak O, Kastner MT, Voill-Glaninger A, et al.

CORONA VIRUS DISEASE

- The Distinct Regulation of the Vitamin D and Aryl Hydrocarbon Receptors in COVID-19. *Nutrients*. 2024 Feb 22;16(5):598. <https://doi.org/10.3390/nu16050598>. PMID: 38474725
- Sartini M, Del Puente F, Oliva M, et al. Preventive Vitamin D Supplementation and Risk for COVID-19 Infection: A Systematic Review and Meta-Analysis. *Nutrients*. 2024 Feb 28;16(5):679. <https://doi.org/10.3390/nu16050679>. PMID: 38474807
 - Talebzadeh A, Ghaffari H, Ghaffari K, et al. The effect of vitamin D deficiency on platelet parameters in patients with COVID-19. *Front Cell Infect Microbiol*. 2024 Mar 8;14:1360075. <https://doi.org/10.3389/fcimb.2024.1360075>. eCollection 2024. PMID: 38524183
 - Tentolouris N, Achilla C, Anastasiou IA, et al. The Association of Vitamin D Receptor Polymorphisms with COVID-19 Severity. *Nutrients*. 2024 Mar 2;16(5):727. <https://doi.org/10.3390/nu16050727>. PMID: 38474855
 - Valapala VNG, Dasari N, Kolli VK, et al. Impact of 25-hydroxy vitamin D levels in severe acute respiratory syndrome coronavirus 2 patients with respect to clinical and biochemical profile: An experience from a tertiary care hospital. *Clin Nutr ESPEN*. 2024 Apr;60:187-194. <https://doi.org/10.1016/j.clnesp.2024.01.021>. Epub 2024 Jan 30. PMID: 38479909
 - Wu JY, Liu MY, Hsu WH, et al. Association between vitamin D deficiency and post-acute outcomes of SARS-CoV-2 infection. *Eur J Nutr*. 2024 Mar;63(2):613-622. <https://doi.org/10.1007/s00394-023-03298-3>. Epub 2023 Dec 19. PMID: 38112761
 - Zhong Z, Zhao L, Zhao Y, et al. High-dose vitamin D supplementation in patients with COVID-19: A meta-analysis of randomized controlled trials. *Food Sci Nutr*. 2023 Dec 7;12(3):1808-1817. <https://doi.org/10.1002/fsn3.3875>. eCollection 2024 Mar. PMID: 38455212
- ## DERMATOLOGIA
- [No authors listed] The association between vitamin D levels and psoriasis in people aged 40-79 years. *Br J Dermatol*. 2024 Apr 17;190(5):e54. <https://doi.org/10.1093/bjd/ljae120>. PMID: 38630933
 - AbdElneam AI, Al-Dhubaibi MS, Bahaj SS, et al. C-reactive protein as a novel biomarker for vitamin D deficiency in alopecia areata. *Skin Res Technol*. 2024 Mar;30(3):e13657. <https://doi.org/10.1111/srt.13657>. PMID: 38528743
 - Abdulcader Riyaz SM, Torwane NA, Almunshari AA, et al. Evaluation of the Function of Vitamin D in Treating Oral Lichen Planus. *J Pharm Bioallied Sci*. 2024 Feb;16(Suppl 1):S714-S716. https://doi.org/10.4103/jpbs.jpbs_961_23. Epub 2024 Feb 29. PMID: 38595429
 - Anand S, Shen A, Cheng CE, et al. Combination of vitamin D and photodynamic therapy enhances immune responses in murine models of squamous cell skin cancer. *Photodiagnosis Photodyn Ther*. 2024 Feb;45:103983. <https://doi.org/10.1016/j.pdpdt.2024.103983>. Epub 2024 Jan 27. PMID: 38281610
 - Aryanian Z, Balighi K, Goodarzi A, et al. Vitamin D and HPV infection: Clinical pearls. *J Cosmet Dermatol*. 2024 Mar 15. <https://doi.org/10.1111/jocd.16280>. Online ahead of print. PMID: 38491753
 - Azeez F, Sunil M, Sahadevan G, et al. Lamellar ichthyosis with a novel NIPAL4 variant showing dramatic response to high-dose vitamin D therapy. *Pediatr Dermatol*. 2024 Mar-Apr;41(2):348-350. <https://doi.org/10.1111/pde.15484>. Epub 2023 Nov 28. PMID: 38018299
 - Kim JC, Kim HR, Park JS, et al. Vitamin D supplementation can enhance therapeutic effects of excimer laser in patients with vitiligo. *J Cosmet Dermatol*. 2024 Mar;23(3):839-848. <https://doi.org/10.1111/jocd.16043>. Epub 2023 Oct 21. PMID: 37864402
 - Kluijver LG, Nekouei Shahraki M, Wagenmakers MAEM, et al. The effects of cholecalciferol and afamelanotide on vitamin D levels in erythropoietic protoporphyria; a multicentre cohort study. *Br J Dermatol*. 2024 Apr 18;ljae148. <https://doi.org/10.1093/bjd/ljae148>. Online ahead of print. PMID: 38634774
 - Mohtasham N, Mohajertehran F, Afzalanjavani F, et al. Association between Vitamin D Receptor Polymorphism and Susceptibility to Oral Lichen Planus and Oral Squamous Cell Carcinoma. *Iran J Otorhinolaryngol*. 2024 Mar;36(2):381-389. <https://doi.org/10.22038/IJORL.2024.73925.3489>. PMID: 38476562
 - Safari-Faramani R, Salehi M, Ghambari Haji Shore S, et al. Serum level of vitamin D in patients with recurrent aphthous stomatitis: A systematic review and meta-analysis of case control studies. *Clin Exp Dent Res*. 2024 Feb;10(1):e794. <https://doi.org/10.1002/cre2.794>. Epub 2023 Oct 3. PMID: 37786385
 - Toker M, Ch'en PY, Rangu S, et al. Vitamin D deficiency may be associated with severity of hidradenitis suppurativa: a retrospective cohort analysis of a racially and ethnically diverse patient population. *Int J Dermatol*. 2024 Feb;63(2):e43-e44. <https://doi.org/10.1111/ijd.16833>. Epub 2023 Sep 12. PMID: 37697952
- ## EMATOLOGIA
- Ahamed F, Jaiswal A, Sahoo S, et al. Impact of supplementation with iron-folic acid (IFA) and vitamin D(3) compared with IFA alone on haemoglobin levels in elderly people with mild-to-moderate anaemia: protocol for the double-blind, randomised, placebo-controlled Iron and vitamin D trial in Elderly Anemia (IDEA). *BMJ Open*. 2024 Apr 16;14(4):e080303. <https://doi.org/10.1136/bmjopen-2023-080303>. PMID: 38626969
 - Ciftciler R, Ciftciler AE, Yildirimel C. Evaluation of vitamin D status in adult patients with newly diagnosed immune thrombocytopenia. *J Investig Med*. 2024 Apr;72(4):326-332. <https://doi.org/10.1177/10815589241235660>. Epub 2024 Mar 8. PMID: 38373911
 - Gujarathi R, Lakhanpal MR, Chelikam N, et al. Prevalence, Outcomes, and Complications of Vitamin D Deficiency Among Patients with Multiple Myeloma: Nationwide Burden of Disease. *J Investig Med*. 2024 Apr 17:10815589241249998. <https://doi.org/10.1177/10815589241249998>. Online ahead of print. PMID: 38632835
 - Iriani A, Rachman A, Fatina MK, et al. Gene expression profiling of vitamin D metabolism enzymes in leukemia and lymphoma patients: molecular aspect interplay of VDR, CYP2R1, and CYP24A1. *Mol Biol Rep*. 2024 Apr 17;51(1):526. <https://doi.org/10.1007/s11033-024-09432-6>. PMID: 38632160
 - Jramne-Saleem Y, Danilenko M. Roles of Glutathione and AP-1 in the Enhancement of Vitamin D-Induced Differentiation by Activators of the Nrf2 Signaling Pathway in Acute Myeloid Leukemia Cells. *Int J Mol*

- Sci. 2024 Feb 14;25(4):2284. <https://doi.org/10.3390/ijms25042284>. PMID: 38396960
- Kim S, Cho H, Kim M, et al. The Prognostic Significance of Vitamin D Deficiency in Korean Patients With Multiple Myeloma. *Clin Lymphoma Myeloma Leuk.* 2024 Mar;24(3):e112-e118. <https://doi.org/10.1016/j.clml.2023.12.002>. Epub 2023 Dec 6. PMID: 38177055
 - Mehta K, Awan M, Devlin S, et al. Hypercalcaemia of malignancy: a case of vitamin-D-mediated hypercalcaemia in lymphoma. *BMJ Case Rep.* 2024 Feb 6;17(2):e256126. <https://doi.org/10.1136/bcr-2023-256126>. PMID: 38320825
 - Ødum AF, Geisler C. Vitamin D in Cutaneous T-Cell Lymphoma. *Cells.* 2024 Mar 13;13(6):503. <https://doi.org/10.3390/cells13060503>. PMID: 38534347
 - Ruiz Lopez JN, McNeil GE, Zirpoli G, et al. Vitamin D and monoclonal gammopathy of undetermined significance (MGUS) among U.S. Black women. *Cancer Causes Control.* 2024 Feb;35(2):277-279. <https://doi.org/10.1007/s10552-023-01798-5>. Epub 2023 Sep 14. PMID: 37707565
 - Shen HR, Tang J, Li WY, et al. 25-Hydroxy vitamin D deficiency is an inferior predictor of peripheral T-cell lymphomas. *Ann Hematol.* 2024 Feb;103(2):565-574. <https://doi.org/10.1007/s00277-023-05536-4>. Epub 2023 Nov 11. PMID: 37951853
- ENDOCRINOLOGIA**
- Abiri B, Valizadeh M, Ramezani Ahmadi A, et al. Association of vitamin D levels with anthropometric and adiposity indicators across all age groups: a systematic review of epidemiologic studies. *Endocr Connect.* 2024 Jan 4;13(2):e230394. <https://doi.org/10.1530/EC-23-0394>. Print 2024 Feb 1. PMID: 38032745
 - Ahola AJ, Harjutsalo V, Groop PH, et al. The use of dietary supplements, and the association between supplemental vitamin D and glycaemic control in adult individuals with type 1 diabetes. *Diabet Med.* 2024 May;41(5):e15308. <https://doi.org/10.1111/dme.15308>. Epub 2024 Feb 14. PMID: 38356242
 - Akhter A, Alouffi S, Shahab U, et al. Vitamin D supplementation modulates glycosylated hemoglobin (HbA1c) in diabetes mellitus. *Arch Biochem Biophys.* 2024 Mar;753:109911. <https://doi.org/10.1016/j.abb.2024.109911>. Epub 2024 Jan 26. PMID: 38280562
 - Alali M, Alkulaib NS, Alkhars A, et al. Thyroid eye disease in Eastern Province of Saudi Arabia: clinical profile and correlation with vitamin D deficiency. *Orbit.* 2024 Feb;43(1):28-32. <https://doi.org/10.1080/01676830.2023.2181975>. Epub 2023 Mar 1. PMID: 36855900
 - Albai O, Braha A, Timar B, et al. Vitamin D-A New Therapeutic Target in the Management of Type 2 Diabetes Patients. *J Clin Med.* 2024 Feb 28;13(5):1390. <https://doi.org/10.3390/jcm13051390>. PMID: 38592202
 - Alhakami M, Lajdam GB, Ghaddaf AA, et al. Preoperative Vitamin D and Calcium Administration in Patients Undergoing Thyroidectomy: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *OTO Open.* 2024 Feb 16;8(1):e116. <https://doi.org/10.1002/oto2.116>. eCollection 2024 Jan-Mar. PMID: 38371915
 - Alzahrani SH, Baig M, Yaghmour KA, et al. Determinants of Vitamin D deficiency among type 2 diabetes mellitus patients: A retrospective study. *Medicine (Baltimore).* 2024 Feb 23;103(8):e37291. <https://doi.org/10.1097/MD.00000000000037291>. PMID: 38394491
 - Alzohily B, AlMenhali A, Gariballa S, et al. Unraveling the complex interplay between obesity and vitamin D metabolism. *Sci Rep.* 2024 Mar 30;14(1):7583. <https://doi.org/10.1038/s41598-024-58154-z>. PMID: 38555277
 - Baidya S, Tuladhar ET, Sharma VK, et al. Association of Low Vitamin D and Intact Parathyroid Hormone (iPTH) in Nepalese Population: When Does iPTH Exactly Rise? *J Endocr Soc.* 2024 Feb 20;8(4):bvad143. <https://doi.org/10.1210/jeendo/bvad143>. eCollection 2024 Feb 19. PMID: 38414997
 - Begga A, Mehaoudi RI, Ghozlani A, et al. The risk of metabolic syndrome is associated with vitamin D and inflammatory status in premenopausal and postmenopausal Algerian women. *Ir J Med Sci.* 2024 Apr;193(2):615-626. <https://doi.org/10.1007/s11845-023-03516-1>. Epub 2023 Sep 13. PMID: 37702977
 - Bischoff-Ferrari HA, Kistler-Fischbacher M, Gaengler S, et al. Effects of testosterone and vitamin D on fall risk in prefrail hypogonadal men: a factorial design RCT. *J Nutr Health Aging.* 2024 Mar 28;28(5):100217. <https://doi.org/10.1016/j.jnha.2024.100217>. Online ahead of print. PMID: 38552276
 - Bournot L, Payet T, Marcotorchino J, et al. Vitamin D metabolism is altered during aging alone or combined with obesity in male mice. *Biofactors.* 2024 Feb 24. <https://doi.org/10.1002/biof.2047>. Online ahead of print. PMID: 38401051
 - Chen H, Zhang Y, Miao Y, et al. Vitamin D inhibits ferroptosis and mitigates the kidney injury of prediabetic mice by activating the Klotho/p53 signaling pathway. *Apoptosis.* 2024 Apr 1. <https://doi.org/10.1007/s10495-024-01955-4>. Online ahead of print. PMID: 38558206
 - da Silva AD, Oliveira JS, de Castro IC, et al. Association of vitamin D and cognition in people with type 2 diabetes: a systematic review. *Nutr Rev.* 2024 Apr 12;82(5):622-638. <https://doi.org/10.1093/nutrit/nuad085>. PMID: 37403328
 - Dadon Y, Hecht Sagie L, Mimouni FB, et al. Vitamin D and Insulin-Dependent Diabetes: A Systematic Review of Clinical Trials. *Nutrients.* 2024 Apr 3;16(7):1042. <https://doi.org/10.3390/nu16071042>. PMID: 38613075
 - di Filippo L, Bilezikian JP, Canalis E, et al. New insights into the vitamin D/PTH axis in endocrine-driven metabolic bone diseases. *Endocrine.* 2024 Apr 17. <https://doi.org/10.1007/s12020-024-03784-6>. Online ahead of print. PMID: 38632163
 - Durá-Travé T, Gallinas-Victoriano F. Autoimmune Thyroiditis and Vitamin D. *Int J Mol Sci.* 2024 Mar 9;25(6):3154. <https://doi.org/10.3390/ijms25063154>. PMID: 38542128
 - Elsheikh E, Alabdullah AI, AlHarbi SS, et al. The Relationship between Vitamin D Levels and Blood Glucose and Cholesterol Levels. *Clin Pract.* 2024 Feb 29;14(2):426-435. <https://doi.org/10.3390/clinpract14020032>. PMID: 38525711
 - Fei S, Fan J, Cao J, et al. Vitamin D deficiency increases the risk of diabetic peripheral neuropathy in elderly type 2 diabetes mellitus patients by predominantly increasing large-fiber lesions. *Diabetes Res Clin Pract.*

- 2024 Mar;209:111585. <https://doi.org/10.1016/j.diabres.2024.111585>. Epub 2024 Feb 15. PMID: 38364910
- Feng F, Zhou B, Zhou CL, et al. Vitamin D, selenium, and antidiabetic drugs in the treatment of type 2 diabetes mellitus with Hashimoto's thyroiditis. *World J Diabetes*. 2024 Feb 15;15(2):209-219. <https://doi.org/10.4239/wjd.v15.i2.209>. PMID: 38464371
 - Fu Y, Lu M, Zhang K, et al. Vitamin D status, vitamin D receptor polymorphisms, and risk of type 2 diabetes: A prospective cohort study. *J Clin Endocrinol Metab*. 2024 Apr 4:dgae221. <https://doi.org/10.1210/clinem/dgae221>. Online ahead of print. PMID: 38571313
 - Ha NN, Huynh TKT, Phan NUP, et al. Synergistic effect of metformin and vitamin D(3) on osteogenic differentiation of human adipose tissue-derived mesenchymal stem cells under high d-glucose conditions. *Regen Ther*. 2023 Dec 26;25:147-156. <https://doi.org/10.1016/j.reth.2023.12.003>. eCollection 2024 Mar. PMID: 38486821
 - Huang C, Luo D, Sun M, et al. No causal association between serum vitamin D levels and diabetes retinopathy: A Mendelian randomization analysis. *Nutr Metab Cardiovasc Dis*. 2024 May;34(5):1295-1304. <https://doi.org/10.1016/j.numecd.2024.01.033>. Epub 2024 Feb 5. PMID: 38508994
 - Kawahara T, Suzuki G, Mizuno S, et al. Active vitamin D treatment in the prevention of sarcopenia in adults with prediabetes (DPVD ancillary study): a randomised controlled trial. *Lancet Healthy Longev*. 2024 Apr;5(4):e255-e263. [https://doi.org/10.1016/S2666-7568\(24\)00009-6](https://doi.org/10.1016/S2666-7568(24)00009-6). Epub 2024 Mar 1. PMID: 38437855
 - LeBlanc ES, Pittas AG, Nelson J, et al. Racial differences in measures of glycemia in the Vitamin D and Type 2 Diabetes (D2d) Study: a secondary analysis of a randomized trial. *BMJ Open Diabetes Res Care*. 2024 Feb 12;12(1):e003613. <https://doi.org/10.1136/bmjdr-2023-003613>. PMID: 38350671
 - Li Y, Sun J, Jiao Y, et al. Impaired Sensitivity to Thyroid Hormones Is Associated With Decreased Vitamin D Levels in the Euthyroid Population. *J Clin Endocrinol Metab*. 2024 Feb 20;109(3):691-700. <https://doi.org/10.1210/clinem/dgad607>. PMID: 37831130
 - Liang Z, Zhang Y, Li G. Association between vitamin D levels and risk of periodontitis in patients with metabolic syndrome. *J Dent Sci*. 2024 Apr;19(2):1012-1020. <https://doi.org/10.1016/j.jds.2023.06.026>. Epub 2023 Jul 11. PMID: 38618072
 - Liu YJ, Duan JW, Lu DH, et al. Association between vitamin D status and cardiometabolic risk factors in adults with type 2 diabetes in Shenzhen, China. *Front Endocrinol (Lausanne)*. 2024 Feb 14;15:1346605. <https://doi.org/10.3389/fendo.2024.1346605>. eCollection 2024. PMID: 38419955
 - Logesh R, Hari B, Chidambaram K, et al. Molecular effects of Vitamin-D and PUFAs metabolism in skeletal muscle combating Type-II diabetes mellitus. *Gene*. 2024 Apr 30;904:148216. <https://doi.org/10.1016/j.gene.2024.148216>. Epub 2024 Feb 1. PMID: 38307219
 - Miao Y, Zhang L, Zhang D, et al. Effects of vitamin D and/or calcium intervention on sleep quality in individuals with prediabetes: a post hoc analysis of a randomized controlled trial. *Eur J Nutr*. 2024 Feb 16. <https://doi.org/10.1007/s00394-024-03345-7>. Online ahead of print. PMID: 38366270
 - Mostafa EA, Abo Hashish MMA, Ismail NA, et al. Assessment of vitamin D status and vitamin D receptor polymorphism in Egyptian children with Type 1 diabetes. *J Genet Eng Biotechnol*. 2024 Mar;22(1):100343. <https://doi.org/10.1016/j.jgeb.2023.100343>. Epub 2024 Jan 22. PMID: 38494252
 - Öberg J, Jorde R, Almås B, et al. Vitamin D Status During Adolescence and the Impact of Lifestyle Changes: 2 Years' Follow-up From the Fit Futures Study. *J Clin Endocrinol Metab*. 2024 Feb 20;109(3):e1029-e1039. <https://doi.org/10.1210/clinem/dgad655>. PMID: 37955862
 - Parveen A, Batool A, Wajid A, et al. Delving the vitamin D receptor variation and expression profiles in the context of type 2 diabetes among families. *Mol Biol Rep*. 2024 Apr 15;51(1):514. <https://doi.org/10.1007/s11033-024-09387-8>. PMID: 38622480
 - Rashid SA. Ultrasound Assessment of Carotid Intima-Media Thickness: Comparison between Diabetes and Nondiabetes Subjects, and Correlation with Serum Vitamin D. *Radiol Res Pract*. 2024 Mar 15;2024:7178920. <https://doi.org/10.1155/2024/7178920>. eCollection 2024. PMID: 38523880
 - Sarathi V, Dhananjaya MS, Karlekar M, et al. Vitamin D deficiency or resistance and hypophosphatemia. *Best Pract Res Clin Endocrinol Metab*. 2024 Mar;38(2):101876. <https://doi.org/10.1016/j.beem.2024.101876>. Epub 2024 Jan 30. PMID: 38365463
 - Sarkar S, Osman N, Thrimawithana T, et al. Alleviation of Diabetic Retinopathy by Glucose-Triggered Delivery of Vitamin D via Dextran-Gated Functionalized Mesoporous Silica Nanoparticles. *ACS Appl Bio Mater*. 2024 Feb 19;7(2):1260-1270. <https://doi.org/10.1021/acsabm.3c01200>. Epub 2024 Feb 5. PMID: 38315019
 - Shahidzadeh Yazdi Z, Streeten EA, Whitlatch HB, et al. Critical Role for 24-Hydroxylation in Homeostatic Regulation of Vitamin D Metabolism. *J Clin Endocrinol Metab*. 2024 Mar 14:dgae156. <https://doi.org/10.1210/clinem/dgae156>. Online ahead of print. PMID: 38481375
 - Sun X, Yang X, Zhu X, et al. Association of vitamin D deficiency and subclinical diabetic peripheral neuropathy in type 2 diabetes patients. *Front Endocrinol (Lausanne)*. 2024 Mar 25;15:1354511. <https://doi.org/10.3389/fendo.2024.1354511>. eCollection 2024. PMID: 38590822
 - Thirunavukkarasu R, Chitra A, Asirvatham A, et al. Association of Vitamin D Deficiency and Vitamin D Receptor Gene Polymorphisms with Type 1 Diabetes Risk: A South Indian Familial Study. *J Clin Res Pediatr Endocrinol*. 2024 Mar 11;16(1):21-30. <https://doi.org/10.4274/jcrpe.galenos.2023.2022-12-7>. Epub 2023 Aug 10. PMID: 37559366
 - Valer-Martinez A, Sayon-Orea C, Martinez JA, et al. Vitamin D and risk of developing type 2 diabetes in the SUN project: a prospective cohort study. *J Endocrinol Invest*. 2024 Mar 8. <https://doi.org/10.1007/s40618-024-02324-3>. Online ahead of print. PMID: 38459212
 - Xu Z, Zhang J, Xiang S, et al. Association Between the Water Distribution in the Human Body and 25-Hydroxyvitamin D Among the Type 2 Diabetes Mellitus Population: A Possible Pathway Between Vitamin D and Diabetic Nephropathy. *Diabetes Metab Syndr Obes*. 2024 Feb 7;17:597-610. <https://doi.org/10.1016/j.dsx.2023.10.010>. PMID: 38315019

- doi.org/10.2147/DMSO.S442789. eCollection 2024. PMID: 38343585
- Zahedi M, Motahari MM, Fakhri F, et al. Is vitamin D deficiency associated with retinopathy in type 2 diabetes mellitus? A case-control study. *Clin Nutr ESPEN*. 2024 Feb;59:158-161. <https://doi.org/10.1016/j.clnesp.2023.11.011>. Epub 2023 Nov 22. PMID: 38220370
 - Zhang QW, Wang Y, Tong ZY, et al. Vitamin D May Play a Vital Role in Alleviating Type 2 Diabetes Mellitus by Modulating the Ferroptosis Signaling Pathway. *Horm Metab Res*. 2024 Mar;56(3):193-196. <https://doi.org/10.1055/a-2122-5701>. Epub 2023 Jul 4. PMID: 37402397
 - Zhuang Y, Zhuang Z, Cai Q, et al. Serum vitamin D is substantially reduced and predicts flares in diabetic retinopathy patients. *J Diabetes Investig*. 2024 Mar 12. <https://doi.org/10.1111/jdi.14185>. Online ahead of print. PMID: 38469994
- ## EPIDEMIOLOGIA
- Alibrahim H, Swed S, Bohsas H, et al. Assessment the awareness of vitamin D deficiency among the general population in Syria: an online cross-sectional study. *BMC Public Health*. 2024 Apr 1;24(1):938. <https://doi.org/10.1186/s12889-024-18376-2>. PMID: 38561740
 - AlShaibani T, Abdul Razzaq R, Radhi A, et al. Ethnic-Based Assessment of Vitamin D and Magnesium Status in the Kingdom of Bahrain. *Cureus*. 2024 Mar 11;16(3):e55967. <https://doi.org/10.7759/cureus.55967>. eCollection 2024 Mar. PMID: 38469368
 - Brîndușe IA, Eclemea I, Neculau AE, et al. Vitamin D Status in the Adult Population of Romania-Results of the European Health Examination Survey. *Nutrients*. 2024 Mar 16;16(6):867. <https://doi.org/10.3390/nu16060867>. PMID: 38542778
 - Ganmaa D, Hemmings S, Jolliffe DA, et al. Influence of vitamin D supplementation on muscle strength and exercise capacity in Mongolian schoolchildren: a randomised controlled trial. *medRxiv [Preprint]*. 2024 Mar 28:2024.03.27.24304943. <https://doi.org/10.1101/2024.03.27.24304943>. PMID: 38585948
 - Gill S, Adenan AM, Thomas EE, et al. Beyond the Tropics: Unraveling the Complex Relationship between Sun Exposure, Dietary Intake, and Vitamin D Deficiency in Coastal Malaysians. *Nutrients*. 2024 Mar 14;16(6):830. <https://doi.org/10.3390/nu16060830>. PMID: 38542740
 - Graça Dias M, Vasco E, Ravasco F, et al. The first harmonised total diet study in Portugal: Vitamin D occurrence and intake assessment. *Food Chem*. 2024 Mar 1;435:136676. <https://doi.org/10.1016/j.foodchem.2023.136676>. Epub 2023 Jun 22. PMID: 37797450
 - Khaledi K, Hoseini R, Gharzi A. The impact of vitamin D on type 2 diabetes management: boosting PTP1B gene expression and physical activity benefits in rats. *Genes Nutr*. 2024 Mar 2;19(1):4. <https://doi.org/10.1186/s12263-023-00736-z>. PMID: 38431555
 - Little M, Brockington M, Aker A, et al. Wild fish consumption and latitude as drivers of vitamin D status among Inuit living in Nunavik, northern Quebec. *Public Health Nutr*. 2024 Feb 22;27(1):e81. <https://doi.org/10.1017/S1368980024000491>. PMID: 38384120
 - Mahajan C, Singla N, Jain D. High Incidence of Vitamin D Deficiency (VDD) Among Indoor Workers: Association with Dietary and Lifestyle Factors. *Ecol Food Nutr*. 2024 Mar-Apr;63(2):40-62. <https://doi.org/10.1080/03670244.2024.2306386>. Epub 2024 Jan 28. PMID: 38282295
 - Marti DT, Nesiú A, Balta C, et al. Retrospective Analysis of Vitamin D Deficiency in an Adult Population of Arad County, Western Romania (2019-2022). *Life (Basel)*. 2024 Feb 18;14(2):274. <https://doi.org/10.3390/life14020274>. PMID: 38398782
 - Mendes MM, Araújo MM, Botelho PB, et al. Seasonal and sex-related variation in vitamin D status and its association with other biochemical markers in young individuals: A cross-sectional study. *PLoS One*. 2024 Mar 29;19(3):e0298862. <https://doi.org/10.1371/journal.pone.0298862>. eCollection 2024. PMID: 38551916
 - Meshkin A, Badiiee F, Salari N, et al. The Global Prevalence of Vitamin D Deficiency in the Elderly: A Meta-analysis. *Indian J Orthop*. 2024 Jan 21;58(3):223-230. <https://doi.org/10.1007/s43465-023-01089-w>. eCollection 2024 Mar. PMID: 38425824
 - Moguem Soubgui AF, Ndeme Mboussi VVS, Kojom Foko LP, et al. Exploring demographical, clinical, and dietary determinants of vitamin D deficiency among adults in Douala, Cameroon during the COVID-19 era. *Heliyon*. 2024 Feb 1;10(3):e24926. <https://doi.org/10.1016/j.heliyon.2024.e24926>. eCollection 2024 Feb 15. PMID: 38352796
 - Morales-Villar AB, Maldonado-Hernández J, Eduardo Álvarez-Licona N, et al. Determinants of Vitamin D Status in Healthy Young Adults from Mexico City. *Arch Med Res*. 2024 Apr;55(3):102968. <https://doi.org/10.1016/j.arcmed.2024.102968>. Epub 2024 Feb 17. PMID: 38368779
 - Nor MA, Keles E, Hassan-Kadle MA, et al. Vitamin D levels in patients attending a tertiary care hospital in Mogadishu, Somalia: a retrospective review of 28,125 cases. *Rev Assoc Med Bras (1992)*. 2024 Mar 15;70(1):e20231100. <https://doi.org/10.1590/1806-9282.20231100>. eCollection 2024. PMID: 38511759
 - Zaremba SMM, Conduit-Turner K. Knowledge of vitamin D and practices of vitamin D supplementation in a Scottish adult population: A cross-sectional study. *Nutr Health*. 2024 Mar 18;26(01060241238824). <https://doi.org/10.1177/02601060241238824>. Online ahead of print. PMID: 38497198
 - Zhang C, Cui J, Li S, et al. Combined effects of vitamin D deficiency and systemic inflammation on all-cause mortality and cause-specific mortality in older adults. *BMC Geriatr*. 2024 Feb 1;24(1):122. <https://doi.org/10.1186/s12877-024-04706-x>. PMID: 38302956
 - Zhang C, Liu Y, Corner L, et al. Interaction between handgrip strength and vitamin D deficiency on all-cause mortality in community-dwelling older adults: a prospective cohort study. *Public Health*. 2024 Feb;227:1-8. <https://doi.org/10.1016/j.puhe.2023.11.022>. Epub 2023 Dec 13. PMID: 38096620
- ## GASTROENTEROLOGIA
- Bowman CA, Bichoupan K, Posner S, et al. A Prospective Open-Label Dose-Response Study to Correct Vitamin D Deficiency in Cirrhosis. *Dig Dis Sci*. 2024 Mar;69(3):1015-1024. <https://doi.org/10.1007/s10620-023-08224-5>. Epub 2024 Jan 13. PMID: 38217683

- Calza L, Giglia M, Viale P. Relationship Between Vitamin D Deficiency and Nonalcoholic Fatty Liver Disease in Patients With HIV-1 Infection. *J Acquir Immune Defic Syndr*. 2024 Mar 1;95(3):e5-e7. <https://doi.org/10.1097/QAI.0000000000003359>. PMID: 38408219
- Cameron BA, Anderson CW, Jensen ET, et al. Vitamin D Levels as a Potential Modifier of Eosinophilic Esophagitis Severity in Adults. *Dig Dis Sci*. 2024 Apr;69(4):1287-1292. <https://doi.org/10.1007/s10620-023-08264-x>. Epub 2024 Jan 6. PMID: 38183560
- Chang E. Vitamin D Mitigates Hepatic Fat Accumulation and Inflammation and Increases SIRT1/AMPK Expression in AML-12 Hepatocytes. *Molecules*. 2024 Mar 21;29(6):1401. <https://doi.org/10.3390/molecules29061401>. PMID: 38543036
- da Cruz SP, da Cruz SP, Pereira S, et al. Vitamin D and the Metabolic Phenotype in Weight Loss After Bariatric Surgery: A Longitudinal Study. *Obes Surg*. 2024 May;34(5):1561-1568. <https://doi.org/10.1007/s11695-024-07148-x>. Epub 2024 Mar 8. PMID: 38459277
- Ebrahimpour-Koujan S, Sohrabpour AA, Giovannucci E, et al. Effects of vitamin D supplementation on liver fibrogenic factors, vitamin D receptor and liver fibrogenic microRNAs in metabolic dysfunction-associated steatotic liver disease (MASLD) patients: an exploratory randomized clinical trial. *Nutr J*. 2024 Feb 27;23(1):24. <https://doi.org/10.1186/s12937-024-00911-x>. PMID: 38413933
- Gezer A, Aras SY, Baygatalp NK, et al. Effect of vitamin D(3) and a stinging nettle extract on the gastric tissue of rats administered with trinitrobenzene sulfonic acid. *Vet Med (Praha)*. 2024 Mar 28;69(3):84-93. <https://doi.org/10.17221/111/2023-VETMED>. eCollection 2024 Mar. PMID: 38623153
- Giustina A, di Filippo L, Facciorusso A, et al. Correction: Vitamin D status and supplementation before and after Bariatric Surgery: Recommendations based on a systematic review and meta-analysis. *Rev Endocr Metab Disord*. 2024 Apr;25(2):447-448. <https://doi.org/10.1007/s11154-023-09837-x>. PMID: 38502455
- Huang YQ, Liu JL, Chen GX, et al. Berberine Enhances Intestinal Mucosal Barrier Function by Promoting Vitamin D Receptor Activity. *Chin J Integr Med*. 2024 Feb;30(2):143-151. <https://doi.org/10.1007/s11655-023-3547-x>. Epub 2023 Apr 12. PMID: 37046128
- Jouët P, Altman C, Bruley DES Varannes S, et al. Probiotics plus vitamin D in irritable bowel syndrome: a prospective multicentric non-interventional study. *Minerva Gastroenterol (Torino)*. 2024 Mar 6. <https://doi.org/10.23736/S2724-5985.24.03581-2>. Online ahead of print. PMID: 38445822
- Kim GH, Jeong HJ, Lee YJ, et al. Vitamin D ameliorates age-induced nonalcoholic fatty liver disease by increasing the mitochondrial contact site and cristae organizing system (MICOS) 60 level. *Exp Mol Med*. 2024 Feb;56(1):142-155. <https://doi.org/10.1038/s12276-023-01125-7>. Epub 2024 Jan 4. PMID: 38172593
- Lee SB, Jin MH, Yoon JH. The contribution of vitamin D insufficiency to the onset of steatotic liver disease among individuals with metabolic dysfunction. *Sci Rep*. 2024 Mar 20;14(1):6714. <https://doi.org/10.1038/s41598-024-57380-9>. PMID: 38509247
- Lu Y, Chen H, Chen Y, et al. Accumulated LPS induced by colitis altered the activities of vitamin D-metabolizing hydroxylases and decreased the generation of 25-hydroxyvitamin D. *Chem Biol Interact*. 2024 Apr 6;395:110997. <https://doi.org/10.1016/j.cbi.2024.110997>. Online ahead of print. PMID: 38588969
- Matias JN, Lima VM, Nutels GS, et al. The use of vitamin D for patients with inflammatory bowel diseases. *Int J Vitam Nutr Res*. 2024 Feb;94(1):54-70. <https://doi.org/10.1024/0300-9831/a000764>. Epub 2022 Aug 26. PMID: 36017738
- Mumit Sarkar A, Al Mukit A, Bari T, et al. Association of low serum 25-Hydroxy vitamin D [25(OH) d] with hepatic encephalopathy in patients with decompensated liver cirrhosis. *Arab J Gastroenterol*. 2024 Mar 8;S1687-1979(24)00014-5. <https://doi.org/10.1016/j.ajg.2024.01.014>. Online ahead of print. PMID: 38458876
- Neshatian L, Grant G, Fernandez-Becker N, et al. The association between vitamin-D deficiency and fecal incontinence. *Neurogastroenterol Motil*. 2024 Apr;36(4):e14753. <https://doi.org/10.1111/nmo.14753>. Epub 2024 Feb 5. PMID: 38316640
- Ocal S, Cerci K, Buldukoglu OC, et al. Effect of serum vitamin D levels on the severity of acute pancreatitis: A prospective study. *Pancreatol*. 2024 Mar;24(2):206-210. <https://doi.org/10.1016/j.pan.2024.01.004>. Epub 2024 Jan 11. PMID: 38262841
- Okubo T, Atsukawa M, Tsubota A, et al. Low vitamin D levels accelerates muscle mass loss in patients with chronic liver disease. *PLoS One*. 2024 Mar 26;19(3):e0299313. <https://doi.org/10.1371/journal.pone.0299313>. eCollection 2024. PMID: 38530830
- Panarese A, Dajti E, Eusebi LH, et al. Idiopathic chronic intestinal pseudo-obstruction syndrome is strongly associated with low serum levels of vitamin D. *Eur J Gastroenterol Hepatol*. 2024 May 1;36(5):584-587. <https://doi.org/10.1097/MEG.0000000000002757>. Epub 2024 Mar 25. PMID: 38477850
- Pasidi E, Varelziz P. Vitamin D(3) Bioaccessibility from Supplements and Foods-Gastric pH Effect Using a Static In Vitro Gastrointestinal Model. *Molecules*. 2024 Mar 5;29(5):1153. <https://doi.org/10.3390/molecules29051153>. PMID: 38474665
- Thapaliya I, Yadav J. Hypocalcaemic tetany linked to vitamin D deficiency and hypomagnesemia in primary intestinal lymphangiectasia: a literature review. *Ann Med Surg (Lond)*. 2024 Feb 28;86(4):2049-2057. <https://doi.org/10.1097/MS9.0000000000001850>. eCollection 2024 Apr. PMID: 38576918
- Valvano M, Magistroni M, Cesaro N, et al. Effectiveness of Vitamin D Supplementation on Disease Course in Inflammatory Bowel Disease Patients: Systematic Review With Meta-Analysis. *Inflamm Bowel Dis*. 2024 Feb 1;30(2):281-291. <https://doi.org/10.1093/ibd/izac253>. PMID: 36579768
- Wen T, Xie J, Ma L, et al. Vitamin D Receptor Activation Reduces Hepatic Inflammation via Enhancing Macrophage Autophagy in Cholestatic Mice. *Am J Pathol*. 2024 Mar;194(3):369-383. <https://doi.org/10.1016/j.ajpath.2023.11.016>. Epub 2023 Dec 15. PMID: 38104651
- Wu M, Wang J, Zhou W, et al. Vitamin D inhibits tamoxifen-induced non-alcoholic fatty liver disease through a non-classical estrogen receptor/liver X re-

ceptor pathway. *Chem Biol Interact.* 2024 Feb 1;389:110865. <https://doi.org/10.1016/j.cbi.2024.110865>. Epub 2024 Jan 6. PMID: 38191086

- Yang A, Chen Y, Gao Y, et al. Vitamin D(3) exacerbates steatosis while calcipotriol inhibits inflammation in non-alcoholic fatty liver disease in Sod1 knockout mice: a comparative study of two forms of vitamin D. *Food Funct.* 2024 Apr 9. <https://doi.org/10.1039/d4fo00215f>. Online ahead of print. PMID: 38590249

GINECOLOGIA OSTETRICIA

- Akinajo OR, Olorunfemi G, Oshun PO, et al. Serum Vitamin D Deficiency and Male Infertility: A Relationship? *Cureus.* 2024 Mar 13;16(3):e56070. <https://doi.org/10.7759/cureus.56070>. eCollection 2024 Mar. PMID: 38618377
- Amelia CZ, Gwan CH, Qi TS, et al. Prevalence of vitamin D insufficiency in early pregnancies- a Singapore study. *PLoS One.* 2024 Apr 11;19(4):e0300063. <https://doi.org/10.1371/journal.pone.0300063>. eCollection 2024. PMID: 38603703
- Antunes RA, Melo BML, Souza MDCB, et al. Vitamin D and follicular recruitment in the in vitro fertilization cycle. *JBRA Assist Reprod.* 2024 Feb 21. <https://doi.org/10.5935/1518-0557.20240005>. Online ahead of print. PMID: 38381779
- Ara R, Deeba F, Nandi ER, et al. Association of Serum Vitamin D level with Asthenozoospermic Male. *Mymensingh Med J.* 2024 Apr;33(2):446-452. PMID: 38557524
- Arrhenius B, Surcel HM, Hinkka Yli-Salomäki S, et al. Vitamin D levels of pregnant immigrant women and developmental disorders of language, learning and coordination in offspring. *PLoS One.* 2024 Feb 29;19(2):e0299808. <https://doi.org/10.1371/journal.pone.0299808>. eCollection 2024. PMID: 38422005
- Asemi Z, Karamali M, Esmailzadeh A. Editorial Expression of Concern: Effects of calcium-vitamin D co-supplementation on glycaemic control, inflammation and oxidative stress in gestational diabetes: a randomised placebo-controlled trial. *Diabetologia.* 2024 Apr;67(4):759-760. <https://doi.org/10.1007/s00125-023-06077-1>. PMID: 38289386
- Ashraf A, Singh R, Ganai BA, et al. Hypermethylation and down-regulation of

vitamin D receptor (VDR) as contributing factors for polycystic ovary syndrome (PCOS): a case-control study from Kashmir, North India. *Arch Gynecol Obstet.* 2024 Mar;309(3):1091-1100. <https://doi.org/10.1007/s00404-023-07326-9>. Epub 2024 Jan 16. PMID: 38227018

- Aşır F, Duran SÇ, Afşin M, et al. Investigation of Vitamin D Levels in Men with Suspected Infertility. *Life (Basel).* 2024 Feb 18;14(2):273. <https://doi.org/10.3390/life14020273>. PMID: 38398783
- Barbosa O, Sim-Sim M, Silvestre MP, et al. Effects of vitamin D levels during pregnancy on prematurity: a systematic review protocol. *BMJ Open.* 2024 Feb 28;14(2):e076702. <https://doi.org/10.1136/bmjopen-2023-076702>. PMID: 38418231
- Borumandnia N, Rostami M, Talebi A, et al. The impact of vitamin D changes during pregnancy on the development of maternal adverse events: a random forest analysis. *BMC Pregnancy Childbirth.* 2024 Feb 10;24(1):125. <https://doi.org/10.1186/s12884-024-06294-5>. PMID: 38341546
- Cui L, Li Z, Yang X, et al. Mediating Effect of Insulin-Like Growth Factor-I Underlying the Link Between Vitamin D and Gestational Diabetes Mellitus. *Reprod Sci.* 2024 Feb 12. <https://doi.org/10.1007/s43032-024-01468-0>. Online ahead of print. PMID: 38347382
- Eickman K, Maxwell R, McGinnis LK, et al. Total and bioavailable 25-hydroxyvitamin D is not associated with improved sexual dysfunction following vitamin D supplementation in women with polycystic ovarian syndrome: a pilot study. *J Sex Med.* 2024 Feb 27;21(3):240-247. <https://doi.org/10.1093/jsxmed/qdad176>. PMID: 38303661
- Fang X, Xie Y, Cao S, et al. Associations between maternal urinary rare earth elements during pregnancy and birth weight-for-gestational age: Roles of cord blood vitamin D levels. *Sci Total Environ.* 2024 Feb 20;912:169222. <https://doi.org/10.1016/j.scitotenv.2023.169222>. Epub 2023 Dec 9. PMID: 38081430
- Heidari H, Abbasi K, Feizi A, et al. Effect of vitamin D supplementation on symptoms severity in vitamin D insufficient women with premenstrual syndrome: A random-

ized controlled trial. *Clin Nutr ESPEN.* 2024 Feb;59:241-248. <https://doi.org/10.1016/j.clnesp.2023.11.014>. Epub 2023 Dec 10. PMID: 38220382

- Holt R, Yahyavi SK, Kooij I, et al. Effects of vitamin D on sex steroids, luteinizing hormone, and testosterone to luteinizing hormone ratio in 307 infertile men. *Andrology.* 2024 Mar;12(3):553-560. <https://doi.org/10.1111/andr.13505>. Epub 2023 Aug 9. PMID: 37555466
- Ibrahim Y, Basri NI, Nordin N, et al. Correction: Vitamin D Deficiency and Its Association With Vitamin D Receptor Gene Variants Among Malaysian Women With Hypertensive Disorders in Pregnancy: Protocol for a Nutrigenomics Study. *JMIR Res Protoc.* 2024 Apr 11;13:e59300. <https://doi.org/10.2196/59300>. PMID: 38603774
- Ibrahim Y, Basri NI, Nordin N, et al. Vitamin D Deficiency and Its Association With Vitamin D Receptor Gene Variants Among Malaysian Women With Hypertensive Disorders in Pregnancy: Protocol for a Nutrigenomics Study. *JMIR Res Protoc.* 2024 Mar 26;13:e53722. <https://doi.org/10.2196/53722>. PMID: 38530345
- Jukic AMZ, Sandler DP, Weinberg CR, et al. Vitamin D status and supplementation, calcium supplementation, and timing of natural menopause. *Maturitas.* 2024 Apr;182:107916. <https://doi.org/10.1016/j.maturitas.2024.107916>. Epub 2024 Jan 18. PMID: 38266360
- Kabuyanga RK, Tugirimana PL, Sifa B, et al. Effect of early vitamin D supplementation on the incidence of preeclampsia in primigravid women: a randomised clinical trial in Eastern Democratic Republic of the Congo. *BMC Pregnancy Childbirth.* 2024 Feb 3;24(1):107. <https://doi.org/10.1186/s12884-024-06277-6>. PMID: 38310218
- Katyal G, Kaur G, Ashraf H, et al. Systematic Review of the roles of Inositol and Vitamin D in improving fertility among patients with Polycystic Ovary Syndrome. *Clin Exp Reprod Med.* 2024 Apr 11. <https://doi.org/10.5653/cerm.2023.06485>. Online ahead of print. PMID: 38599886
- Krupa C, Qamar H, O'Callaghan KM, et al. Prenatal but not continued postpartum vitamin D supplementation reduces maternal bone resorption as measured

- by C-terminal telopeptide of type 1 collagen without effects on other biomarkers of bone metabolism. *Endocr Metab Sci*. 2024 Mar 31;14:None. <https://doi.org/10.1016/j.endmts.2023.100154>. PMID: 38558882
- Kurmangali Z, Abdykalykova B, Kurmangali A, et al. The influence of vitamin D on pregnancy and outcomes: Current knowledge and future perspectives. *Gynecol Obstet Invest*. 2024 Mar 8. <https://doi.org/10.1159/000538085>. Online ahead of print. PMID: 38461819
 - Kuroshli Z, Novin MG, Nazarian H, et al. The Efficacy of Vitamin D Supplement in the Expression and Protein Levels of Endometrial Decidualization Factors in Women with Recurrent Implantation Failure. *Reprod Sci*. 2024 Mar;31(3):675-686. <https://doi.org/10.1007/s43032-023-01349-y>. Epub 2023 Oct 10. PMID: 37816991
 - Latifi Z, Oghbaei F, Salemi Z, et al. Vitamin D and its binding protein in patients with leiomyomas. *J Obstet Gynaecol Res*. 2024 Apr;50(4):691-698. <https://doi.org/10.1111/jog.15883>. Epub 2024 Jan 8. PMID: 38192105
 - Legan M, Legan Kokol N. Vitamin D and its role in gynecology: emerging importance of checking vitamin D status in certain gynecological entities. *Minerva Obstet Gynecol*. 2024 Apr;76(2):194-199. <https://doi.org/10.23736/S2724-606X.22.05047-3>. Epub 2022 Jun 8. PMID: 35686635
 - Li DY, Wang L, Li L, et al. Maternal vitamin D status and risk of gestational diabetes mellitus in twin pregnancies: a longitudinal twin pregnancies birth cohort study. *Nutr J*. 2024 Apr 10;23(1):41. <https://doi.org/10.1186/s12937-024-00944-2>. PMID: 38594739
 - Li J, Li M, Li Y, et al. Do serum vitamin D levels affect assisted reproductive outcomes and perinatal outcomes in young non-PCOS patients? A retrospective study. *Arch Gynecol Obstet*. 2024 May;309(5):2099-2106. <https://doi.org/10.1007/s00404-024-07410-8>. Epub 2024 Mar 1. PMID: 38429582
 - Li X, An Z, Yao A, et al. Targeted metabolomics profiling in pregnancy associated with vitamin D deficiency. *BMC Pregnancy Childbirth*. 2024 Apr 20;24(1):295. <https://doi.org/10.1186/s12884-024-06454-7>. PMID: 38643102
 - Lin KC, Huang KJ, Lin MN, et al. Vitamin D Supplementation for Patients with Dysmenorrhoea: A Meta-Analysis with Trial Sequential Analysis of Randomised Controlled Trials. *Nutrients*. 2024 Apr 8;16(7):1089. <https://doi.org/10.3390/nu16071089>. PMID: 38613122
 - Lu W, Chen Y, Ramirez MDA, et al. Vitamin D status alters genes involved in ovarian steroidogenesis in muskrat granulosa cells. *Biochim Biophys Acta Mol Cell Biol Lipids*. 2024 May;1869(4):159469. <https://doi.org/10.1016/j.bbalip.2024.159469>. Epub 2024 Feb 23. PMID: 38402945
 - Maria BG, Russo M, Proietti S, et al. Supplementation with vitamin D improves the embryo quality in in vitro fertilization (IVF) programs, independently of the patients' basal vitamin D status. *Arch Gynecol Obstet*. 2024 Apr 5. <https://doi.org/10.1007/s00404-024-07473-7>. Online ahead of print. PMID: 38580857
 - Milan KL, Jayasuriya R, Harithpriya K, et al. MicroRNA-125b regulates vitamin D resistance by targeting CYP24A1 in the progression of gestational diabetes mellitus. *J Steroid Biochem Mol Biol*. 2024 May;239:106475. <https://doi.org/10.1016/j.jsbmb.2024.106475>. Epub 2024 Feb 11. PMID: 38350553
 - Nisar M, Beigh SA, Mir AQ, et al. Corrigendum to "Association of vitamin D status with redox balance and insulin resistance and its predicting ability for subclinical pregnancy toxemia in pregnant sheep" [Domestic Animal Endocrinology, Volume: 84 (January 2024) 106823]. *Domest Anim Endocrinol*. 2024 Apr;87:106835. <https://doi.org/10.1016/j.domaniend.2023.106835>. Epub 2024 Jan 6. PMID: 38184856
 - O'Callaghan KM, Nowak KG, Dalrymple KV, et al. Vitamin D status of pregnant women with obesity in the United Kingdom and its association with pregnancy outcomes: a secondary analysis of the UPBEAT study. *Br J Nutr*. 2024 Apr 18:1-28. <https://doi.org/10.1017/S0007114524000862>. Online ahead of print. PMID: 38634258
 - Sasotya RS, Kustiandi A, Hidayat YM, et al. Vitamin D receptor expression in hydatidiform mole and gestational trophoblastic neoplasia: A cross-sectional study. *J Taibah Univ Med Sci*. 2023 Oct 7;19(1):184-189. <https://doi.org/10.1016/j.jtumed.2023.09.006>. eCollection 2024 Feb. PMID: 38047239
 - Sörsjö Stevenazzi A, Pihl S, Blomberg M, et al. The association between maternal vitamin D deficiency and postpartum hemorrhage and uterine atony. *Acta Obstet Gynecol Scand*. 2024 Feb;103(2):286-293. <https://doi.org/10.1111/aogs.14719>. Epub 2023 Nov 14. PMID: 37960966
 - Sparic R, Andjic M, Vergara D, et al. PCOS and vitamin D: a clinical appraisal. *Arch Gynecol Obstet*. 2024 Mar;309(3):907-915. <https://doi.org/10.1007/s00404-023-07227-x>. Epub 2023 Sep 25. PMID: 37747553
 - Tinelli A, Panese G, Licchelli M, et al. The impact of epigallocatechin gallate, vitamin D, and D-chiro-inositol on early surgical outcomes of laparoscopic myomectomy: a pilot study. *Arch Gynecol Obstet*. 2024 Mar;309(3):1021-1026. <https://doi.org/10.1007/s00404-023-07324-x>. Epub 2024 Jan 6. PMID: 38183422
 - Walker KC, Pristed SG, Thorsteinsdottir F, et al. Vitamin D(3) among neonates born after in vitro fertilization compared with neonates from the general population. *Acta Obstet Gynecol Scand*. 2024 Apr 18. <https://doi.org/10.1111/aogs.14819>. Online ahead of print. PMID: 38637997
 - Wang CJ, Li Z, Bai YX, et al. Vitamin D nutritional status in early pregnancy and its relationship with periconceptional multiple micronutrients supplementation. *Asia Pac J Clin Nutr*. 2024 Mar;33(1):47-55. [https://doi.org/10.6133/apjcn.202403_33\(1\).0006](https://doi.org/10.6133/apjcn.202403_33(1).0006). PMID: 38494687
 - Xiang L, Liao M, Su Y. Efficacy of metformin combined with vitamin D in the treatment of polycystic ovarian syndrome: A meta-analysis. *Afr J Reprod Health*. 2024 Feb 28;28(2):43-54. <https://doi.org/10.29063/ajrh2024/v28i2.4>. PMID: 38425153
 - Yang P, Lu F. Study on the immunomodulatory mechanism of vitamin D in patients with unexplained recurrent spontaneous abortion. *Heliyon*. 2024 Mar 9;10(6):e27280. <https://doi.org/10.1016/j.heliyon.2024.e27280>. eCollection 2024 Mar 30. PMID: 38496893
 - Zhang M, Chen L, Xu Q, et al. Vitamin D(3) reduces the symptoms of ovarian hyperstimulation syndrome in mice and inhibits the release of granulosa cell angiogenic factor through pentraxin 3. *In Vitro Cell Dev Biol Anim*. 2024 Apr 4. <https://doi.org/10.1007/s11694-024-10000-0>

org/10.1007/s11626-024-00898-z. Online ahead of print. PMID: 38573397

IMMUNOLOGIA

- Ahuja A, Agrawal S, Acharya S, et al. A Comprehensive Review of the Immunomodulatory Effects of Vitamin D in Sepsis. *Cureus*. 2024 Feb 5;16(2):e53678. <https://doi.org/10.7759/cureus.53678>. eCollection 2024 Feb. PMID: 38455817
- Alharthi GNA, Alzaref A. *Cureus*. The Correlation Between Vitamin D Deficiency and Chronic Rhinosinusitis: A Systematic Review. 2024 Mar 11;16(3):e55955. <https://doi.org/10.7759/cureus.55955>. eCollection 2024 Mar. PMID: 38601384
- Antwi MH, Sakyi SA, Appiah SCY, et al. Investigation of serum level relationship of pro-inflammatory and anti-inflammatory cytokines with vitamin D among healthy Ghanaian population. *BMC Res Notes*. 2024 Mar 4;17(1):64. <https://doi.org/10.1186/s13104-024-06721-y>. PMID: 38439034
- Asante EO, Chen Y, Eldholm RS, et al. Associations of Serum Vitamin D With Dental Caries and Periodontitis: The HUNT Study. *Int Dent J*. 2024 Apr 1:S0020-6539(24)00089-3. <https://doi.org/10.1016/j.identj.2024.03.005>. Online ahead of print. PMID: 38565436
- Bastyte D, Tamasauskienė L, Stakaitienė I, et al. The Association of Vitamin D Receptor Gene Polymorphisms with Vitamin D, Total IgE, and Blood Eosinophils in Patients with Atopy. *Biomolecules*. 2024 Feb 11;14(2):212. <https://doi.org/10.3390/biom14020212>. PMID: 38397449
- Berghaus UJ, Cathcart J, Berghaus RD, et al. The impact of age on vitamin D receptor expression, vitamin D metabolism and cytokine production in ex vivo *Rhodococcus equi* infection of equine alveolar macrophages. *Vet Immunol Immunopathol*. 2024 Feb;268:110707. <https://doi.org/10.1016/j.vetimm.2023.110707>. Epub 2024 Jan 2. PMID: 38181474
- Çalık Başaran N, Kırığı D, Tan Ç, et al. Ocular Changes and Tear Cytokines in Individuals with Low Serum Vitamin D Levels: A Cross-Sectional, Controlled Study. *Ocul Immunol Inflamm*. 2024 Apr;32(3):287-294. <https://doi.org/10.1080/09273948.2023.2168698>. Epub 2023 Feb 2. PMID: 36731535
- Figgins EL, Arora P, Gao D, et al. Enhancement of innate immunity in gingival epithelial cells by vitamin D and HDAC inhibitors. *Front Oral Health*. 2024 Mar 14;5:1378566. <https://doi.org/10.3389/froh.2024.1378566>. eCollection 2024. PMID: 38567313
- Hsu MS, Chung TC, Wang PH, et al. Revisiting the association between vitamin D deficiency and active tuberculosis: A prospective case-control study in Taiwan. *J Microbiol Immunol Infect*. 2024 Mar 28:S1684-1182(24)00068-9. <https://doi.org/10.1016/j.jmii.2024.03.005>. Online ahead of print. PMID: 38594108
- Hu JJ, Lin YS, Zhang JC, et al. Vitamin D Improves Klebsiella-Induced Severe Pneumonia in Rats by Regulating Intestinal Microbiota. *Infect Drug Resist*. 2024 Feb 8;17:475-484. <https://doi.org/10.2147/IDR.S442330>. eCollection 2024. PMID: 38348232
- Kilic A, Halu A, De Marzio M, et al. Vitamin D constrains inflammation by modulating the expression of key genes on Chr17q12-21.1. *Elife*. 2024 Apr 3;12:RP89270. <https://doi.org/10.7554/elife.89270>. PMID: 38567749
- Kovacic V. Should I Supplement Vitamin D in a Patient With Sepsis? *J Acute Med*. 2024 Mar 1;14(1):1-8. [https://doi.org/10.6705/j.jacme.202403_14\(1\).0001](https://doi.org/10.6705/j.jacme.202403_14(1).0001). PMID: 38487755
- Levin MJ, Ginde AA, Schmid DS, et al. Effect of high dose vitamin D supplementation on subsequent immune responses to administration of the live herpes zoster vaccine to long-term care residents. *Vaccine*. 2024 Apr 2;42(9):2278-2281. <https://doi.org/10.1016/j.vaccine.2024.02.055>. Epub 2024 Feb 28. PMID: 38423817
- Liu S, Yu Q, Liu J, et al. The interaction between lipid and vitamin D(3) impacts lipid metabolism and innate immunity in Chinese mitten crabs *Eriocheir sinensis*. *Fish Shellfish Immunol*. 2024 Apr;147:109455. <https://doi.org/10.1016/j.fsi.2024.109455>. Epub 2024 Feb 16. PMID: 38369072
- Piccolo M, Stephen A, Baysan A. The antimicrobial effect of different vitamin D compounds on *Streptococcus mutans* and their impact on glycosyltransferase expression. *J Oral Microbiol*. 2024 Mar 27;16(1):2327758. <https://doi.org/10.1080/20002297.2024.2327758>. eCollection 2024. PMID: 38550660
- Rizwan M, Cheng K, Gang Y, et al. Immunomodulatory Effects of Vitamin D and Zinc on Viral Infection. *Biol Trace Elem Res*. 2024 Mar 7. <https://doi.org/10.1007/s12011-024-04139-y>. Online ahead of print. PMID: 38451442
- Sayegh S, Fantecelle CH, Laphanuwat P, et al. Vitamin D(3) inhibits p38 MAPK and senescence-associated inflammatory mediator secretion by senescent fibroblasts that impacts immune responses during ageing. *Aging Cell*. 2024 Apr;23(4):e14093. <https://doi.org/10.1111/acel.14093>. Epub 2024 Jan 29. PMID: 38287646
- Tehrani S, Abbasian L, Dehghan Manshadi SA, et al. Vitamin D deficiency and oral candidiasis in patients with HIV infection: A case-control study. *BMC Infect Dis*. 2024 Feb 19;24(1):217. <https://doi.org/10.1186/s12879-024-09065-x>. PMID: 38373939
- Xie K, Zhang Y, Zhang M, et al. Association of vitamin D with HIV infected individuals, TB infected individuals, and HIV-TB co-infected individuals: a systematic review and meta-analysis. *Front Public Health*. 2024 Feb 14;12:1344024. <https://doi.org/10.3389/fpubh.2024.1344024>. eCollection 2024. PMID: 38439754
- Zhang X, Chen Z, Xiang Y, et al. The Association between Serum Level of Vitamin D and Inflammatory Biomarkers in Hospitalized Adult Patients: A Cross-Sectional Study Based on Real-World Data. *Mediators Inflamm*. 2024 Mar 21;2024:8360538. <https://doi.org/10.1155/2024/8360538>. eCollection 2024. PMID: 38549715
- Zou M, Song Q, Yin T, et al. Vitamin D improves autoimmune diseases by inhibiting Wnt signaling pathway. *Immun Inflamm Dis*. 2024 Feb;12(2):e1192. <https://doi.org/10.1002/iid3.1192>. PMID: 38414312

LABORATORIO

- Aidoukovitch A, Bankell E, Svensson D, et al. Vitamin D triggers hCAP18/LL-37 production: Implications for LL-37-induced human osteoblast cytotoxicity. *Biochem Biophys Res Commun*. 2024 Apr 18;712-713:149962. <https://doi.org/10.1016/j.bbrc.2024.149962>. Online ahead of print. PMID: 38642493
- Begum M, Saikia R, Saikia SP. Triple quadru-

- pole liquid chromatography-mass spectrometry-mediated evaluation of vitamin D(2) accumulation potential, antioxidant capacities, and total polyphenol content of white jelly mushroom (*Tremella fuciformis* Berk.). *Mycologia*. 2024 Mar 15;1-11. <https://doi.org/10.1080/00275514.2024.2313435>. Online ahead of print. PMID: 38489159
- Cai T, Chen M, Yang J, et al. An AuNPs-based electrochemical aptasensor for the detection of 25-hydroxy vitamin D(3). *Anal Sci*. 2024 Apr;40(4):599-607. <https://doi.org/10.1007/s44211-023-00489-0>. Epub 2024 Jan 8. PMID: 38190076
 - Cristelo C, Sá AF, Lúcio M, et al. Vitamin D loaded into lipid nanoparticles shows insulinotropic effect in INS-1E cells. *Eur J Pharm Sci*. 2024 Apr 2;196:106758. <https://doi.org/10.1016/j.ejps.2024.106758>. Online ahead of print. PMID: 38570054
 - Delanghe JR, Speeckaert MM, Maenhout T. Factors to take into account when interpreting 25-hydroxy-vitamin D serum levels. *Acta Clin Belg*. 2024 Mar 7;1-6. <https://doi.org/10.1080/17843286.2024.2327218>. Online ahead of print. PMID: 38454315
 - Fabisiak A, Brzeminski P, Sicinski RR, et al. Design, synthesis, and biological activity of D-bishomo-1alpha,25-dihydroxyvitamin D(3) analogs and their crystal structures with the vitamin D nuclear receptor. *Eur J Med Chem*. 2024 Apr 10;271:116403. <https://doi.org/10.1016/j.ejmech.2024.116403>. Online ahead of print. PMID: 38615411
 - Ferro-Costas D, Sánchez-Murcia PA, Fernández-Ramos A. Unraveling the Catalytic Mechanism of beta-Cyclodextrin in the Vitamin D Formation. *J Chem Inf Model*. 2024 Apr 10. <https://doi.org/10.1021/acs.jcim.3c02049>. Online ahead of print. PMID: 38598310
 - Jambo H, Dispas A, Pérez-Mayán L, et al. Comprehensive analysis of vitamin D(3) impurities in oily drug products using supercritical fluid chromatography-mass spectrometry. *Drug Test Anal*. 2024 Mar 14. <https://doi.org/10.1002/dta.3670>. Online ahead of print. PMID: 38482734
 - McGinty RC, Phillips KM. Quantitation of total vitamin D(2) and D(4) in UV-exposed mushrooms using HPLC with UV detection after novel two-step solid phase extraction. *Food Chem*. 2024 May 1;439:138091. <https://doi.org/10.1016/j.foodchem.2023.138091>. Epub 2023 Dec 16. PMID: 38104441
 - Palermiiti A, Manca A, Mastrantonio F, et al. Comparative Performance Assessment of Novel Fluorescence Immunoassay POCs for Measuring Circulating Levels of Vitamin-D. *Molecules*. 2024 Apr 5;29(7):1636. <https://doi.org/10.3390/molecules29071636>. PMID: 38611915
 - Park J, Choi Y, Cho S, et al. Vitamin D Status and Reference Intervals Measured by Liquid Chromatography-Tandem Mass Spectrometry for the Early Adulthood to Geriatric Ages in a South Korean Population during 2017-2022. *Nutrients*. 2024 Feb 22;16(5):604. <https://doi.org/10.3390/nu16050604>. PMID: 38474732
 - Pilařová V, Socas-Rodríguez B, Nováková L, et al. Analysis of vitamin D and its metabolites in biological samples - Part I: Optimization and comparison of UHPSFC-MS/MS and UHPLC-MS/MS methods. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2024 Apr 15;1237:124087. <https://doi.org/10.1016/j.jchromb.2024.124087>. Epub 2024 Mar 12. PMID: 38513431
 - Pilařová V, Socas-Rodríguez B, Nováková L, et al. Analysis of vitamin D and its metabolites in biological samples - Part II: Optimization of a sample preparation method for liver tissue. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2024 Apr 15;1237:124088. <https://doi.org/10.1016/j.jchromb.2024.124088>. Epub 2024 Mar 11. PMID: 38520897
 - Rinaldi F, Tengattini S, Amore E, et al. Combination of a solid phase extraction and a two-dimensional LC-UV method for the analysis of vitamin D(3) and its isomers in olive oil. *Talanta*. 2024 Mar 1;269:125486. <https://doi.org/10.1016/j.talanta.2023.125486>. Epub 2023 Nov 25. PMID: 38043340
 - Rubab ZE, Naz S, Ashraf M, et al. Identification of a Single Nucleotide Polymorphism of Vitamin D Receptor (VDR) and Vitamin D Binding Protein (VDBP) Gene and Its Dysregulated Pathway Through VDR-VDBP Interaction Network Analysis in Vitamin D-Deficient Infertile Females. *Cureus*. 2024 Mar 5;16(3):e55602. <https://doi.org/10.7759/cureus.55602>. eCollection 2024 Mar. PMID: 38586664
 - Shakeri M, Ghobadi R, Sohrabvandi S, et al. Co-encapsulation of omega-3 and vitamin D(3) in beeswax solid lipid nanoparticles to evaluate physicochemical and in vitro release properties. *Front Nutr*. 2024 Apr 3;11:1323067. <https://doi.org/10.3389/fnut.2024.1323067>. eCollection 2024. PMID: 38633604
 - Sheerin S. Verifying the nonreporting hemolysis index for potassium, phosphate, magnesium, AST, LDH, iron, CA 19-9, and vitamin D, using Beckman Coulter AU5800 and DxI800 automated analyzers. *Lab Med*. 2024 Apr 18;lmae027. <https://doi.org/10.1093/labmed/lmae027>. Online ahead of print. PMID: 38639324
 - Sun Y, Alessandrini L, Angeloni S, et al. From 7-dehydrocholesterol to vitamin D(3): Optimization of UV conversion procedures toward the valorization of fish waste matrices. *Food Chem X*. 2024 Apr 9;22:101373. <https://doi.org/10.1016/j.foodchem.2024.101373>. eCollection 2024 Jun 30. PMID: 38633740
 - van der Westhuizen J, Christiaan Vorster B, Opperman M, et al. Optimised liquid chromatography tandem mass spectrometry method for the simultaneous quantification of serum vitamin D analogues while also accounting for epimers and isobars. *J Chromatogr B Analyt Technol Biomed Life Sci*. 2024 Feb 1;1233:123972. <https://doi.org/10.1016/j.jchromb.2023.123972>. Epub 2023 Dec 15. PMID: 38163391
 - Weiler HA, Bielecki A, Fu W, et al. Cholesterol Interference in the Assessment of Vitamin D Status: A Canadian Health Measures Survey Biobank Project. *J Nutr*. 2024 Apr 4:S0022-3166(24)00173-1. <https://doi.org/10.1016/j.tjnut.2024.04.003>. Online ahead of print. PMID: 38582388
 - Wise SA, Kuszak AJ, Camara JE. Evolution and impact of Standard Reference Materials (SRMs) for determining vitamin D metabolites. *Anal Bioanal Chem*. 2024 Apr;416(9):2335-2358. <https://doi.org/10.1007/s00216-024-05143-w>. Epub 2024 Jan 18. PMID: 38236394
 - Xu Z, Yu K, Zhang M, et al. Accurate Clinical Detection of Vitamin D by Mass Spectrometry: A Review. *Crit Rev Anal Chem*. 2024 Feb 20:1-25. <https://doi.org/10.1080/10408347.2024.2316237>. Online ahead of print. PMID: 38376891

MISCELLANEA

- Al Hinai M, Jansen EC, Song PX, et al. Iron Deficiency and Vitamin D Deficiency Are Associated with Sleep in Females of Reproductive Age: An Analysis of NHANES 2005-2018 Data. *J Nutr*. 2024 Feb;154(2):648-657. <https://doi.org/10.1093/ajcn/154.2.648>

- doi.org/10.1016/j.tjnut.2023.11.030. Epub 2023 Nov 30. PMID: 38042351
- Al Masseri Z, Alqahtani M, Almoshawi E, et al. Vitamin D-binding protein deficiency: an underrecognized Mendelian disorder of vitamin D metabolism. *Hum Genet.* 2024 Feb;143(2):101-105. <https://doi.org/10.1007/s00439-023-02632-3>. Epub 2024 Jan 24. PMID: 38265561
 - Albiñana C, Zhu Z, Borbye-Lorenzen N, et al. Publisher Correction: Genetic correlates of vitamin D-binding protein and 25-hydroxyvitamin D in neonatal dried blood spots. *Nat Commun.* 2024 Feb 26;15(1):1741. <https://doi.org/10.1038/s41467-024-46199-7>. PMID: 38409298
 - Aliyeva A, Han JS, Kim Y, et al. Vitamin D Deficiency as a Risk Factor of Tinnitus: An Epidemiological Study. *Ann Otol Rhinol Laryngol.* 2024 Mar 28;34894241242330. <https://doi.org/10.1177/00034894241242330>.
 - Alloubani A, Abuhajia B, Almatari M, et al. Predicting vitamin D deficiency using optimized random forest classifier. *Clin Nutr ESPEN.* 2024 Apr;60:1-10. <https://doi.org/10.1016/j.clnesp.2023.12.146>. Epub 2023 Dec 28. PMID: 38479895
 - Alpert JS. Hey, Doc, Should I be Taking Vitamin D Capsules Just Like My Neighbor? *Am J Med.* 2024 Feb;137(2):77-78. <https://doi.org/10.1016/j.amjmed.2023.04.024>. Epub 2023 May 4. PMID: 37148988
 - American Society for Microbiology. Retraction for Angelakis et al., "Vitamin D and Prolonged Treatment with Photosensitivity-Associated Antibiotics". *Antimicrob Agents Chemother.* 2024 Feb 7;68(2):e0150823. <https://doi.org/10.1128/aac.01508-23>. Epub 2024 Jan 4. PMID: 38174940
 - Aslan C, Aslankoc R, Ozmen O, et al. Protective effect of vitamin D on learning and memory impairment in rats induced by high fructose corn syrup. *Behav Brain Res.* 2024 Feb 29;459:114763. <https://doi.org/10.1016/j.bbr.2023.114763>. Epub 2023 Nov 15. PMID: 37977339
 - Azizian S, Khezri S, Shabani M, et al. Vitamin D ameliorates celecoxib cardiotoxicity in a doxorubicin heart failure rat model via enhancement of the antioxidant defense and minimizing mitochondrial dysfunction. *Naunyn Schmiedebergs Arch Pharmacol.* 2024 Feb 9. <https://doi.org/10.1007/s00210-024-02998-9>. Online ahead of print. PMID: 38334825
 - Bhanot R, Kumar A, Shankar S, et al. Serum vitamin D level alterations in retinal vascular occlusions. *Photodiagnosis Photodyn Ther.* 2024 Feb;45:103855. <https://doi.org/10.1016/j.pdpdt.2023.103855>. Epub 2023 Oct 20. PMID: 37866444
 - Bleizgys A. Zinc, Magnesium and Vitamin K Supplementation in Vitamin D Deficiency: Pathophysiological Background and Implications for Clinical Practice. *Nutrients.* 2024 Mar 14;16(6):834. <https://doi.org/10.3390/nu16060834>. PMID: 38542745
 - Bovet L, Roth L, Kherad O. [Vitamin D intoxication and "milk alkali syndrome"]. *Rev Med Suisse.* 2024 Feb 14;20(861):360-362. <https://doi.org/10.53738/REVME.2024.20.861.360>. PMID: 38353439 French.
 - Brennan E, Butler AE, Nandakumar M, et al. Relationship between endocrine disrupting chemicals (phthalate metabolites, triclosan and bisphenols) and vitamin D in female subjects: An exploratory pilot study. *Chemosphere.* 2024 Feb;349:140894. <https://doi.org/10.1016/j.chemosphere.2023.140894>. Epub 2023 Dec 7. PMID: 38070612
 - Cadamuro J, Huber-Schönauer U, Mrazek C, et al. Changing the tide in vitamin D testing: An 8-year review of a demand management approach. *Biochem Med (Zagreb).* 2024 Feb 15;34(1):010401. <https://doi.org/10.11613/BM.2024.010401>. PMID: 38361736
 - Cashman KD, O'Neill CM. Strategic food vehicles for vitamin D fortification and effects on vitamin D status: A systematic review and meta-analysis of randomised controlled trials. *J Steroid Biochem Mol Biol.* 2024 Apr;238:106448. <https://doi.org/10.1016/j.jsbmb.2023.106448>. Epub 2023 Dec 21. PMID: 38141736
 - Cashman KD. Vitamin D fortification of foods - sensory, acceptability, cost, and public acceptance considerations. *J Steroid Biochem Mol Biol.* 2024 May;239:106494. <https://doi.org/10.1016/j.jsbmb.2024.106494>. Epub 2024 Feb 25. PMID: 38412925
 - Chang K, Albright JA, Quinn M, et al. A Diagnosis of Vitamin D Deficiency Is Associated With Increased Rates of Primary Patellar Instability and Need for Recurrent Surgical Stabilization. *Sports Health.* 2024 May;Jun;16(3):465-472. <https://doi.org/10.1177/19417381231172726>. Epub 2023 May 19. PMID: 37208906
 - Daoust JL, Weiler HA. In response to: How does Canada's new vitamin D fortification policy affect the high prevalence of inadequate intake of the vitamin? *Appl Physiol Nutr Metab.* 2024 Mar 1;49(3):411-412. <https://doi.org/10.1139/apnm-2023-0586>. Epub 2024 Feb 26. PMID: 38407172
 - Dodd SAS, Adolphe J, Dewey C, et al. Efficacy of vitamin D(2) in maintaining serum total vitamin D concentrations and bone mineralisation in adult dogs fed a plant-based (vegan) diet in a 3-month randomised trial. *Br J Nutr.* 2024 Feb 14;131(3):391-405. <https://doi.org/10.1017/S000714523001952>. Epub 2023 Sep 6. PMID: 37671585
 - Dominiak M, Leszczyszyn A, Łączmańska I, et al. Relationship in development of malocclusions to polymorphisms of selected vitamin D receptors. *Adv Clin Exp Med.* 2024 Feb 14. <https://doi.org/10.17219/acem/169977>. Online ahead of print. PMID: 38353502
 - Duarte Romero B, Waterhouse M, Baxter C, et al. The effect of three years of vitamin D supplementation on erectile dysfunction: Results from the randomized placebo-controlled D-Health Trial. *Clin Nutr ESPEN.* 2024 Apr;60:109-115. <https://doi.org/10.1016/j.clnesp.2024.01.011>. Epub 2024 Jan 18. PMID: 38479897
 - Elshahid AR, Zaky AM, Goda YMH, et al. Relationship between vitamin D receptors gene polymorphism and arteriogenic erectile dysfunction. *Urologia.* 2024 Mar 23;3915603241241430. <https://doi.org/10.1177/03915603241241430>. Online ahead of print. PMID: 38520301
 - Fakheri RJ. Vitamin D Supplementation: To D or Not to D? *Mayo Clin Proc.* 2024 Apr;99(4):529-533. <https://doi.org/10.1016/j.mayocp.2024.01.003>. PMID: 38569808
 - Fang Z, Wu X, Wang F, et al. Vitamin D(3) mediated peptides-calcium chelate self-assembly: Fabrication, stability and improvement on cellular calcium transport. *Food Chem.* 2024 Mar 30;437(Pt 1):137779. <https://doi.org/10.1016/j.>

- foodchem.2023.137779. Epub 2023 Oct 20. PMID: 37871429
- Francis JR, Barber HD, Beals D, et al. The Relationship of low-serum Vitamin D and Early Dental Implant Failure. *J Oral Implantol.* 2024 Mar 26. <https://doi.org/10.1563/aaid-joi-D-23-00168>. Online ahead of print. PMID: 38530826
 - Gao H, Zhao X, Guo Y, et al. Coated sodium butyrate and vitamin D(3) supplementation improve gut health through influencing intestinal immunity, barrier, and microflora in early-stage broilers. *J Sci Food Agric.* 2024 May;104(7):4058-4069. <https://doi.org/10.1002/jsfa.13288>. Epub 2024 Jan 25. PMID: 38270478
 - Gao S, Qiu K, Zheng J, et al. Dietary 25-Hydroxycholecalciferol Supplementation as a Vitamin D(3) Substitute Improves Performance, Egg Quality, Blood Indexes, Jejunal Morphology, and Tibia Quality in Late-Phase Laying Hens. *Animals (Basel).* 2024 Mar 13;14(6):878. <https://doi.org/10.3390/ani14060878>. PMID: 38539976
 - Giustina A, Lazaretti-Castro M, Martineau AR, et al. A view on vitamin D: a pleiotropic factor? *Nat Rev Endocrinol.* 2024 Apr;20(4):202-208. <https://doi.org/10.1038/s41574-023-00942-0>. Epub 2024 Jan 22. PMID: 38253860
 - Giustina A. Vitamin D at the crossroad of prediabetes, sarcopenia, and risk of falls. *Lancet Healthy Longev.* 2024 Apr;5(4):e239-e240. [https://doi.org/10.1016/S2666-7568\(24\)00032-1](https://doi.org/10.1016/S2666-7568(24)00032-1). Epub 2024 Mar 1. PMID: 38437856
 - Guo J, He Q, Li Y. Machine learning-based prediction of vitamin D deficiency: NHANES 2001-2018. *Front Endocrinol (Lausanne).* 2024 Feb 16;15:1327058. <https://doi.org/10.3389/fendo.2024.1327058>. eCollection 2024. PMID: 38449846
 - Gupta M, Bredenoord AJ. EoE in the Sunlight: The Contribution of Vitamin D to Disease Presentation and Severity. *Dig Dis Sci.* 2024 Apr;69(4):1090-1092. <https://doi.org/10.1007/s10620-023-08259-8>. Epub 2024 Jan 6. PMID: 38183557
 - Haghighi AH, Shojaee M, Askari R, et al. The effects of 12 weeks resistance training and vitamin D administration on neuromuscular joint, muscle strength and power in postmenopausal women. *Physiol Behav.* 2024 Feb 1;274:114419. <https://doi.org/10.1016/j.physbeh.2023.114419>. Epub 2023 Nov 28. PMID: 38036018
 - Hamayal M, Khurshied S, Zahid MA, et al. Exploring the Significance of Vitamin D Levels as a Biomarker in Ear Diseases: A Narrative Review. *Cureus.* 2024 Feb 24;16(2):e54812. <https://doi.org/10.7759/cureus.54812>. eCollection 2024 Feb. PMID: 38529449
 - Hasan M, Reyer H, Oster M, et al. Exposure to artificial ultraviolet-B light mediates alterations on the hepatic transcriptome and vitamin D metabolism in pigs. *J Steroid Biochem Mol Biol.* 2024 Feb;236:106428. <https://doi.org/10.1016/j.jsbmb.2023.106428>. Epub 2023 Nov 19. PMID: 37984748
 - Hassanpour K, Langari F, Akbarzadeh AR, et al. Safety and Efficacy of Topical Vitamin D in the Management of Dry Eye Disease Associated With Meibomian Gland Dysfunction: A Placebo-Controlled Double-Blind Randomized Controlled Trial. *Cornea.* 2024 May 1;43(5):552-563. <https://doi.org/10.1097/ICO.0000000000003400>. Epub 2023 Oct 9. PMID: 37815305
 - Hendi NN, Nemer G. In silico characterization of the novel SDR42E1 as a potential vitamin D modulator. *J Steroid Biochem Mol Biol.* 2024 Apr;238:106447. <https://doi.org/10.1016/j.jsbmb.2023.106447>. Epub 2023 Dec 29. PMID: 38160768
 - Holt R, Jorsal MJ, Yahyavi SK, et al. High-dose cholecalciferol supplementation to obese infertile men is sufficient to reach adequate vitamin D status. *Br J Nutr.* 2024 Feb 28;131(4):642-647. <https://doi.org/10.1017/S0007114523002222>. Epub 2023 Oct 9. PMID: 37811573
 - Hoseini Z, Behpour N, Hoseini R. Aerobic training with moderate or high doses of vitamin D improve liver enzymes, IxRalpha and PGC-1alpha levels in rats with T2DM. *Sci Rep.* 2024 Mar 17;14(1):6409. <https://doi.org/10.1038/s41598-024-57023-z>. PMID: 38494538
 - Jain GK, Raina V, Grover R, et al. Revisiting the significance of nano-vitamin D for food fortification and therapeutic application. *Drug Dev Ind Pharm.* 2024 Feb;50(2):89-101. <https://doi.org/10.1080/03639045.2023.2301478>. Epub 2024 Jan 26. PMID: 38175566
 - Janubová M, Žitňanová I. The effects of vitamin D on different types of cells. *Steroids.* 2024 Feb;202:109350. <https://doi.org/10.1016/j.steroids.2023.109350>. Epub 2023 Dec 12. PMID: 38096964
 - Kempatsou D, Olsson F, Wählén E, et al. Cellular responses to silencing of PDIA3 (protein disulphide-isomerase A3): Effects on proliferation, migration, and genes in control of active vitamin D. *J Steroid Biochem Mol Biol.* 2024 Mar 7;240:106497. <https://doi.org/10.1016/j.jsbmb.2024.106497>. Online ahead of print. PMID: 38460707
 - Khan SR, Claeson M, Khan A, et al. The effect of physical activity on vitamin D: A systematic review and meta-analysis of intervention studies in humans. *Public Health Pract (Oxf).* 2024 Mar 30;7:100495. <https://doi.org/10.1016/j.puhip.2024.100495>. eCollection 2024 Jun. PMID: 38601179
 - Kong TH, Jung SY, Seo YJ, et al. Vitamin D supplementation in preventing the recurrence of benign paroxysmal positional vertigo. *Laryngoscope Investig Otolaryngol.* 2024 Feb 21;9(1):e1225. <https://doi.org/10.1002/lio2.1225>. eCollection 2024 Feb. PMID: 38384364
 - Kundu G, Shetty R, Modak D, et al. Vitamin D and tear fluid cytokines in predicting outcomes in viral conjunctivitis - A new outlook. *Indian J Ophthalmol.* 2024 Apr 16. https://doi.org/10.4103/IJO.IJO_2345_23. Online ahead of print. PMID: 38622859
 - Kuwata N, Mukohda H, Uchida H, et al. Renal Endocytic Regulation of Vitamin D Metabolism during Maturation and Aging in Laying Hens. *Animals (Basel).* 2024 Feb 2;14(3):502. <https://doi.org/10.3390/ani14030502>. PMID: 38338146
 - Kwon DH, Hwang J, You H, et al. Effects of an in vitro vitamin D treatment on the inflammatory responses in visceral adipose tissue from Ldlr(-/-) mice. *Nutr Res Pract.* 2024 Feb;18(1):19-32. <https://doi.org/10.4162/nrp.2024.18.1.19>. Epub 2023 Dec 11. PMID: 38352213
 - Li B, Luan H, Qin J, et al. Effect of soluble dietary fiber on soy protein isolate emulsion gel properties, stability and delivery of vitamin D(3). *Int J Biol Macromol.* 2024 Mar;262(Pt 1):129806. <https://doi.org/10.1016/j.ijbiomac.2024.129806>. Epub 2024 Feb 5. PMID: 38325693
 - Li R, Wang G, Liu R, et al. Quercetin

- improved hepatic circadian rhythm dysfunction in middle-aged mice fed with vitamin D-deficient diet. *J Physiol Biochem.* 2024 Feb;80(1):137-147. <https://doi.org/10.1007/s13105-023-00990-0>. Epub 2023 Nov 10. PMID: 37948027
- Li X, Pan C, Ma W, et al. Effects of dietary supplementation of fish oil plus vitamin D(3) on gut microbiota and fecal metabolites, and their correlation with nonalcoholic fatty liver disease risk factors: a randomized controlled trial. *Food Funct.* 2024 Mar 4;15(5):2616-2627. <https://doi.org/10.1039/d3fo02319b>. PMID: 38356413
 - Liang S, Zhang H, Jiao L, et al. Vitamin D promotes the folate transport and metabolism in zebrafish (*Danio rerio*). *Am J Physiol Endocrinol Metab.* 2024 Apr 1;326(4):E482-E492. <https://doi.org/10.1152/ajpendo.00380.2023>. Epub 2024 Feb 7. PMID: 38324257
 - Liu Y, Wu Y, Hu X, et al. The role of vitamin D receptor in pre-dentin mineralization and dental repair after injury. *Cell Tissue Res.* 2024 Mar 16. <https://doi.org/10.1007/s00441-024-03886-7>. Online ahead of print. PMID: 38492000
 - Menon JC, Kumari A, Sajjan SM, et al. Novel Mutation in CYP2R1 Causing Vitamin D-Dependent Rickets Type 1b. *JCEM Case Rep.* 2024 Mar 4;2(3):luae024. <https://doi.org/10.1210/jcemcr/luae024>. eCollection 2024 Mar. PMID: 38440125
 - Molina-López J, Herrera-Quintana L, Vázquez-Lorente H, et al. Evolution of Vitamin D Status and Vitamin D Receptor Gene Expression Among Professional Handball Athletes During a Competitive Period. Relationship with Body Composition, Calcium, Magnesium and Phosphorous. *Biol Trace Elem Res.* 2024 Apr;202(4):1345-1355. <https://doi.org/10.1007/s12011-023-03760-7>. Epub 2023 Jul 6. PMID: 37410265
 - Nakajima Y. The Importance of Preventing Vitamin D Deficiency. *J Atheroscler Thromb.* 2024 Feb 21. <https://doi.org/10.5551/jat.ED257>. Online ahead of print. PMID: 38382994
 - Nölle N, Hörnstein A, Lambert C. Vitamin D fortification of selected edible insect species through UVB-treatment. *Food Chem.* 2024 Jun 30;444:138679. <https://doi.org/10.1016/j.foodchem.2024.138679>. Epub 2024 Feb 5. PMID: 38341920
 - Park JS, Na HJ, Kim YJ. The anti-aging effect of vitamin D and vitamin D receptor in *Drosophila* midgut. *Aging (Albany NY).* 2024 Feb 7;16(3):2005-2025. <https://doi.org/10.18632/aging.205518>. Epub 2024 Feb 7. PMID: 38329439
 - Pirdastan S, Mahdavi Roshan M, Mobayen M, et al. Effect of vitamin D on clinical outcomes in patients with thermal injury. *Int Wound J.* 2024 Feb;21(2):e14641. <https://doi.org/10.1111/iwj.14641>. PMID: 38379253
 - Qian C, Ito N, Tsuji K, et al. A PAF-1 antagonist ameliorates hypophosphatemia in the Hyp vitamin D-resistant rickets model mouse. *FEBS Open Bio.* 2024 Feb;14(2):290-299. <https://doi.org/10.1002/2211-5463.13745>. Epub 2023 Dec 25. PMID: 38050660
 - Rose H, Jaffey JA, Cammarano K, et al. Serum vitamin D metabolite and acute-phase protein concentrations are frequently abnormal in a cohort of hospitalized dogs and cats. *J Am Vet Med Assoc.* 2024 Mar 27;1-12. <https://doi.org/10.2460/javma.23.12.0676>. Online ahead of print. PMID: 38537373
 - Ruan L. Association between vitamin D receptor gene polymorphisms and genetic susceptibility to benign prostatic hyperplasia: A systematic review and meta-analysis. *Medicine (Baltimore).* 2024 Mar 1;103(9):e37361. <https://doi.org/10.1097/MD.00000000000037361>. PMID: 38428858
 - Ruggiero C, Tafaro L, Cianferotti L, et al. Targeting the Hallmarks of Aging with Vitamin D: Starting to Decode the Myth. *Nutrients.* 2024 Mar 21;16(6):906. <https://doi.org/10.3390/nu16060906>. PMID: 38542817
 - Shelley SP, James RS, Eustace SJ, et al. High-fat diet effects on contractile performance of isolated mouse soleus and extensor digitorum longus when supplemented with high dose vitamin D. *Exp Physiol.* 2024 Feb;109(2):283-301. <https://doi.org/10.1113/EP091493>. Epub 2023 Nov 20. PMID: 37983200
 - Stapleton EM, Thurman AL, Pezzulo AA, et al. Increased ENaC-mediated liquid absorption across vitamin-D deficient human airway epithelia. *Am J Physiol Cell Physiol.* 2024 Feb 1;326(2):C540-C550. <https://doi.org/10.1152/ajpcell.00369.2023>. Epub 2023 Dec 25. PMID: 38145296
 - Stein HH. Review: Aspects of digestibility and requirements for minerals and vitamin D by growing pigs and sows. *Animal.* 2024 Mar 8;101125. <https://doi.org/10.1016/j.animal.2024.101125>. Online ahead of print. PMID: 38575402
 - Thomson CA, Aragaki AK, Prentice RL, et al. Long-Term Effect of Randomization to Calcium and Vitamin D Supplementation on Health in Older Women : Postintervention Follow-up of a Randomized Clinical Trial. *Ann Intern Med.* 2024 Apr;177(4):428-438. <https://doi.org/10.7326/M23-2598>. Epub 2024 Mar 12. PMID: 38467003
 - Van Ankum EM, Majcher KB, Dolovich AT, et al. Food texture and vitamin D influence mouse mandible form and molar roots. *Anat Rec (Hoboken).* 2024 Mar;307(3):611-632. <https://doi.org/10.1002/ar.25315>. Epub 2023 Sep 13. PMID: 37702738
 - Vatanparast H, Longworth ZL. Reply-in response to: How does Canada's new vitamin D fortification policy affect the high prevalence of inadequate intake of the vitamin? *Appl Physiol Nutr Metab.* 2024 Mar 1;49(3):413-414. <https://doi.org/10.1139/apnm-2024-0005>. Epub 2024 Feb 26. PMID: 38407102
 - Venjakob PL, Bauerfeind L, Staufenbiel R, et al. Effect of 2 dosages of prepartum cholecalciferol injection on blood minerals, vitamin D metabolites, and milk production in multiparous dairy cows: A randomized clinical trial. *J Dairy Sci.* 2024 Apr;107(4):2346-2356. <https://doi.org/10.3168/jds.2023-23389>. Epub 2023 Nov 8. PMID: 37944806
 - Wang K, Ruiz-González A, Räisänen SE, et al. Dietary supplementation of vitamin D(3) and calcium partially recover the compromised time budget and circadian rhythm of lying behavior in lactating cows under heat stress. *J Dairy Sci.* 2024 Mar;107(3):1707-1718. <https://doi.org/10.3168/jds.2023-23589>. Epub 2023 Oct 19. PMID: 37863290
 - Wang Y, Liu J, Xiao H, et al. Dietary intakes of vitamin D promote growth performance and disease resistance in juvenile grass carp (*Ctenopharyngodon idella*). *Fish Physiol*

ol Biochem. 2024 Mar 1. <https://doi.org/10.1007/s10695-024-01330-9>. Online ahead of print. PMID: 38427282

- Wei J, Li L, Peng Y, et al. The Effects of Optimal Dietary Vitamin D(3) on Growth and Carcass Performance, Tibia Traits, Meat Quality, and Intestinal Morphology of Chinese Yellow-Feathered Broiler Chickens. *Animals (Basel)*. 2024 Mar 16;14(6):920. <https://doi.org/10.3390/ani14060920>. PMID: 38540018
- Xiang L, Du T, Zhang J, et al. Vitamin D(3) supplementation shapes the composition of gut microbiota and improves some obesity parameters induced by high-fat diet in mice. *Eur J Nutr*. 2024 Feb;63(1):155-172. <https://doi.org/10.1007/s00394-023-03246-1>. Epub 2023 Sep 23. PMID: 37740812
- Yazdi ZS, Streeten EA, Whitlatch HB, et al. Critical Role for 24-Hydroxylation in Homeostatic Regulation of Vitamin D Metabolism. *medRxiv [Preprint]*. 2024 Mar 7:2023.06.27.23291942. <https://doi.org/10.1101/2023.06.27.23291942>. PMID: 37425945
- Yu CY, Dong L, Li YF, et al. Vitamin D and myopia: a review. *Int Ophthalmol*. 2024 Feb 18;44(1):95. <https://doi.org/10.1007/s10792-024-03009-9>. PMID: 38368573
- Zhang Y, Zhou XQ, Jiang WVD, et al. Emerging role of vitamin D(3) in alleviating intestinal structure injury caused by *Aeromonas hydrophila* in grass carp (*Ctenopharyngodon idella*). *Anim Nutr*. 2023 Dec 20;16:202-217. <https://doi.org/10.1016/j.aninu.2023.07.010>. eCollection 2024 Mar. PMID: 38362511
- Zhou F, Jamilian A, Prabakar K, et al. The effect of vitamin D2 supplementation on vitamin D levels in humans: A time and dose-response meta-analysis of randomized controlled trials. *Steroids*. 2024 May;205:109394. <https://doi.org/10.1016/j.steroids.2024.109394>. Epub 2024 Mar 6. PMID: 38458370
- Zhou XY, Chen XC, Fraley GS, et al. Effects of different dietary vitamin D combinations during the grower phase and the feed restriction phase on growth performance and sternal morphology, mineralization, and related genes expression of bone metabolism in Pekin ducks. *Poult Sci*. 2024 Feb;103(2):103291. <https://doi.org/10.1016/j.psj.2023.103291>.

Epub 2023 Nov 17. PMID: 38043407 A449

NEFROLOGIA

- Cameron IK, Ledwaba-Chapman L, Voong K, et al. Vitamin D metabolism in critically ill patients with acute kidney injury: a prospective observational study. *Crit Care*. 2024 Apr 2;28(1):108. <https://doi.org/10.1186/s13054-024-04869-4>. PMID: 38566240
- Ganimusa I, Chew E, Lu EM. Vitamin D Deficiency, Chronic Kidney Disease and Periodontitis. *Medicina (Kaunas)*. 2024 Feb 29;60(3):420. <https://doi.org/10.3390/medicina60030420>. PMID: 38541146
- Grtan E, Iıkay L, Gcmen AY, et al. Effects of Klotho protein, vitamin D, and oxidative stress parameters on urinary stone formation and recurrence. *Int Urol Nephrol*. 2024 May;56(5):1595-1603. <https://doi.org/10.1007/s11255-023-03929-y>. Epub 2024 Jan 9. PMID: 38194188
- Kee YK, Jeon HJ, Oh J, et al. Vitamin D and narrowband ultraviolet B phototherapy for chronic kidney disease-associated pruritus. *Kidney Res Clin Pract*. 2024 Mar;43(2):177-185. <https://doi.org/10.23876/j.krcp.22.153>. Epub 2023 Mar 22. PMID: 37098678
- Mbadu Lelo S, Musungayi Kajingulu FP, Makulo JR, et al. 25 [OH] Vitamin D and Intact Parathyroid Hormone in Congolese Hemodialysis Patients: Evaluation of KDIGO Targets. *Int J Nephrol Renovasc Dis*. 2024 Feb 19;17:71-79. <https://doi.org/10.2147/IJNRD.S440809>. eCollection 2024. PMID: 38405026
- Murashima M, Yamamoto R, Kanda E, et al. Associations of vitamin D receptor activators and calcimimetics with falls and effect modifications by physical activity: A prospective cohort study on the Japan Dialysis Outcomes and Practice Patterns Study. *Ther Apher Dial*. 2024 Mar 10. <https://doi.org/10.1111/1744-9987.14122>. Online ahead of print. PMID: 38462749
- Zhao S, Chen X, Wan Z, et al. Associations of Serum 25-hydroxyvitamin D and Vitamin D Receptor Polymorphisms with Risks of Cardiovascular Disease and Mortality among Patients with Chronic Kidney Disease: A Prospective Study. *Am J Clin Nutr*. 2024 Apr 10:S0002-9165(24)00391-5. <https://doi.org/10.1016/j.ajcn.2024.04.001>. Online ahead of print. PMID: 38608754

NEUROLOGIA

- Abdelwahab NR, Mabrouk RR, Zakaria NM, et al. Vitamin D receptor gene polymorphism in Egyptian multiple sclerosis patients. *Egypt J Immunol*. 2024 Apr;31(2):44-54. PMID: 38615234
- Acharya M, Singh N, Gupta G, et al. Vitamin D, Calbindin, and calcium signaling: Unraveling the Alzheimer's connection. *Cell Signal*. 2024 Apr;116:111043. <https://doi.org/10.1016/j.cellsig.2024.111043>. Epub 2024 Jan 9. PMID: 38211841
- Adams C, Manouchehrinia A, Quach HL, et al. Evidence supports a causal association between allele-specific vitamin D receptor binding and multiple sclerosis among Europeans. *Proc Natl Acad Sci U S A*. 2024 Feb 20;121(8):e2302259121. <https://doi.org/10.1073/pnas.2302259121>. Epub 2024 Feb 12. PMID: 38346204
- Ahuja A, Agrawal S, Daiya V, et al. Unraveling Neurological Shades: Vitamin D Toxication and Central Pontine Myelinolysis Exposed. *Cureus*. 2024 Feb 7;16(2):e53806. <https://doi.org/10.7759/cureus.53806>. eCollection 2024 Feb. PMID: 38465127
- Akram U, Ali Nadeem Z, Nadeem A, et al. Comment on: Vitamin D status and the risk of neuromyelitis optica spectrum disorders: A systematic review and meta-analysis. *J Clin Neurosci*. 2024 Apr 18:S0967-5868(24)00152-8. <https://doi.org/10.1016/j.jocn.2024.04.014>. Online ahead of print. PMID: 38641491
- Butzkueven H, Ponsonby AL, Stein MS, et al. Vitamin D did not reduce multiple sclerosis disease activity after a clinically isolated syndrome. *Brain*. 2024 Apr 4;147(4):1206-1215. <https://doi.org/10.1093/brain/awad409>. PMID: 38085047
- Canales-Cortés S, Rodríguez-Arribas M, Galindo MF, et al. Vitamin D Receptor Polymorphisms in a Spanish Cohort of Parkinson's Disease Patients. *Genet Test Mol Biomarkers*. 2024 Feb;28(2):59-64. <https://doi.org/10.1089/gtmb.2023.0344>. PMID: 38416664
- Chen LJ, Sha S, Stocker H, et al. The associations of serum vitamin D status and vitamin D supplements use with all-cause

- dementia, Alzheimer's disease, and vascular dementia: a UK Biobank based prospective cohort study. *Am J Clin Nutr.* 2024 Apr;119(4):1052-1064. <https://doi.org/10.1016/j.ajcnut.2024.01.020>. Epub 2024 Jan 29. PMID: 38296029
- Cui P, Hou H, Song B, et al. Vitamin D and ischemic stroke - Association, mechanisms, and therapeutics. *Ageing Res Rev.* 2024 Apr;96:102244. <https://doi.org/10.1016/j.arr.2024.102244>. Epub 2024 Feb 21. PMID: 38395199
 - de Macêdo LP, de Castro Tavares R, Torres Braga M, et al. The relationship between the level of vitamin D and ruptured intracranial aneurysms among patients with high sun exposure. *Sci Rep.* 2024 Feb 12;14(1):3555. <https://doi.org/10.1038/s41598-024-53676-y>. PMID: 38347057
 - Ehnert S, Hauser S, Hengel H, et al. Vitamin D(3) deficiency and osteopenia in spastic paraplegia type 5 indicate impaired bone homeostasis. *Sci Rep.* 2024 Mar 27;14(1):7335. <https://doi.org/10.1038/s41598-024-53057-5>. PMID: 38538623
 - Fasihi M, Samimi-Badabi M, Robatjazi B, et al. Immunoregulatory Effects of the Active Form of Vitamin D (Calcitriol), Individually and in Combination with Curcumin, on Peripheral Blood Mononuclear Cells (PB-MCs) of Multiple Sclerosis (MS) Patients. *Antiinflamm Antiallergy Agents Med Chem.* 2024 Apr 1. <https://doi.org/10.2174/0118715230293847240314073359>. Online ahead of print. PMID: 38566376
 - Gao Z, Danzhen Z, Zhu J, et al. Vitamin D levels and olfactory dysfunction in multiple sclerosis patients. *Int J Neurosci.* 2024 Feb 22;1-8. <https://doi.org/10.1080/00207454.2024.2304081>. Online ahead of print. PMID: 38372675
 - Haindl MT, Üçal M, Tafrafi C, et al. Sex Differences under Vitamin D Supplementation in an Animal Model of Progressive Multiple Sclerosis. *Nutrients.* 2024 Feb 17;16(4):554. <https://doi.org/10.3390/nu16040554>. PMID: 38398879
 - Jain SK, Stevens CM, Margret JJ, et al. Alzheimer's Disease: A Review of Pathology, Current Treatments, and the Potential Therapeutic Effect of Decreasing Oxidative Stress by Combined Vitamin D and L-Cysteine Supplementation. *Antioxid Redox Signal.* 2024 Apr;40(10-12):663-678. <https://doi.org/10.1089/ars.2023.0245>. Epub 2023 Dec 8. PMID: 37756366
 - Jamoussi M, Alaya F, Jamoussi H, et al. Vitamin D receptor gene Bsm1 (rs1544410) polymorphism: role in multiple sclerosis and genotype-phenotype correlations. *Mol Biol Rep.* 2024 Apr 5;51(1):478. <https://doi.org/10.1007/s11033-024-09369-w>. PMID: 38578462
 - Lin X, Zarghami A, Jelinek GA, et al. Diet and omega-3 and vitamin D supplement use predict five-year fatigue and disability trajectories in people with multiple sclerosis. *Mult Scler Relat Disord.* 2024 Apr 8;86:105615. <https://doi.org/10.1016/j.msard.2024.105615>. Online ahead of print. PMID: 38636270
 - Liu J, Roccati E, Chen Y, et al. Seasonal Variations in Vitamin D Levels and the Incident Dementia Among Older Adults Aged 60 Years in the UK Biobank. *J Alzheimers Dis Rep.* 2024 Mar 15;8(1):411-422. <https://doi.org/10.3233/ADR-230077>. eCollection 2024. PMID: 38549631
 - Mahler JV, Solti M, Apóstolos-Pereira SL, et al. Vitamin D(3) as an add-on treatment for multiple sclerosis: A systematic review and meta-analysis of randomized controlled trials. *Mult Scler Relat Disord.* 2024 Feb;82:105433. <https://doi.org/10.1016/j.msard.2024.105433>. Epub 2024 Jan 6. PMID: 38211504
 - Menéndez SG, Manucha W. Vitamin D as a Modulator of Neuroinflammation: Implications for Brain Health. *Curr Pharm Des.* 2024 Feb 1. <https://doi.org/10.2174/0113816128281314231219113942>. Online ahead of print. PMID: 38303529
 - Milanowski J, Nuskiewicz J, Lisewska B, et al. Adipokines, Vitamin D, and Selected Inflammatory Biomarkers among Parkinson's Disease Patients with and without Dyskinesia: A Preliminary Examination. *Metabolites.* 2024 Feb 5;14(2):106. <https://doi.org/10.3390/metabo14020106>. PMID: 38392998
 - Mohanad M, Mohamed SK, Aboulhoda BE, et al. Neuroprotective effects of vitamin D in an Alzheimer's disease rat model: Improvement of mitochondrial dysfunction via calcium/calmodulin-dependent protein kinase kinase 2 activation of Sirtuin1 phosphorylation. *Biofactors.* 2024 Mar-Apr;50(2):371-391. <https://doi.org/10.1002/biof.2013>. Epub 2023 Oct 6. PMID: 37801071
 - Nadeem ZA, Nadeem A. Vitamin D and epilepsy: are anti-epileptic drugs a double-edged sword? Perspective from low- and middle-income countries. *J Egypt Public Health Assoc.* 2024 Mar 5;99(1):5. <https://doi.org/10.1186/s42506-024-00152-0>. PMID: 38438805
 - Philippou E, Hirsch MA, Heyn PC, et al. Vitamin D and Brain Health in Alzheimer and Parkinson Disease. *Arch Phys Med Rehabil.* 2024 Apr;105(4):809-812. <https://doi.org/10.1016/j.apmr.2023.10.023>. Epub 2024 Jan 6. PMID: 38189701
 - Qu F, Zhang M, Weinstock-Guttman B, et al. An ultra-sensitive and high-throughput trapping-micro-LC-MS method for quantification of circulating vitamin D metabolites and application in multiple sclerosis patients. *Sci Rep.* 2024 Mar 6;14(1):5545. <https://doi.org/10.1038/s41598-024-55939-0>. PMID: 38448553
 - Rhim G, Kim MJ. Vitamin D Supplementation and Recurrence of Benign Paroxysmal Positional Vertigo. *Nutrients.* 2024 Feb 28;16(5):689. <https://doi.org/10.3390/nu16050689>. PMID: 38474817
 - Somelar-Duracz K, Jürgenson M, Viil J, et al. 'Unpredictable chronic mild stress does not exacerbate memory impairment or altered neuronal and glial plasticity in the hippocampus of middle-aged vitamin D deficient mice'. *Eur J Neurosci.* 2024 Apr;59(7):1696-1722. <https://doi.org/10.1111/ejn.16256>. Epub 2024 Jan 25. PMID: 38269959
 - Sparaco M, Bonavita S. Vitamin D Supplementation: Effect on Cytokine Profile in Multiple Sclerosis. *J Clin Med.* 2024 Feb 1;13(3):835. <https://doi.org/10.3390/jcm13030835>. PMID: 38337529
 - Wang Z, Yi SY, Zhang YY, et al. The role of vitamin D through SphK1/S1P in the regulation of MS progression. *J Steroid Biochem Mol Biol.* 2024 Feb;236:106425. <https://doi.org/10.1016/j.jsbmb.2023.106425>. Epub 2023 Nov 18. PMID: 37984747
 - Wong D, Bellyou M, Li A, et al. Magnetic resonance spectroscopy in the hippocampus of adult APP/PS1 mice following chronic vitamin D deficiency. *Behav Brain Res.* 2024 Feb 4;457:114713. <https://doi.org/10.1016/j.bbr.2023.114713>. Epub 2023 Oct 12. PMID: 37838248

- Xia M, Zhou Q. Correlation between 25-hydroxy-vitamin D and Parkinson's disease. *IBRO Neurosci Rep*. 2023 Oct 16;16:162-167. <https://doi.org/10.1016/j.ibneur.2023.02.006>. eCollection 2024 Jun. PMID: 38318343
- Yeh WZ, Gresle M, Lea R, et al. The immune cell transcriptome is modulated by vitamin D(3) supplementation in people with a first demyelinating event participating in a randomized placebo-controlled trial. *Clin Immunol*. 2024 May;262:110183. <https://doi.org/10.1016/j.clim.2024.110183>. Epub 2024 Mar 11. PMID: 38479439
- Zhou C, Gan X, Ye Z, et al. Serum 25-Hydroxyvitamin D, Vitamin D Receptor, and Vitamin-D-Binding Protein Gene Polymorphisms and Risk of Dementia Among Older Adults With Prediabetes. *J Gerontol A Biol Sci Med Sci*. 2024 Apr 1;79(4):glae015. <https://doi.org/10.1093/gerona/glae015>. PMID: 38198699
- Zhu Y, Cao S, Hu F, et al. Vitamin D status and neuromyelitis optica spectrum disease: A systematic review and meta-analysis. *Clin Neurol Neurosurg*. 2024 Apr;239:108190. <https://doi.org/10.1016/j.clineuro.2024.108190>. Epub 2024 Mar 8. PMID: 38520792
- anoma Res. 2024 Apr 1;34(2):125-133. <https://doi.org/10.1097/CMR.0000000000000929>. Epub 2024 Feb 13. PMID: 38348498
- Ding L, Wang Y, Tang Z, et al. Exploration of vitamin D metabolic activity-related biological effects and corresponding therapeutic targets in prostate cancer. *Nutr Metab (Lond)*. 2024 Apr 2;21(1):17. <https://doi.org/10.1186/s12986-024-00791-2>. PMID: 38566155
- Elsalahaty MI, Alkafaas SS, Bashir AO, et al. Revealing the association between vitamin D metabolic pathway gene variants and lung cancer risk: a systematic review and meta-analysis. *Front Genet*. 2024 Feb 28;15:1302527. <https://doi.org/10.3389/fgene.2024.1302527>. eCollection 2024. PMID: 38482381
- Fukuzato S, Ohdaira H, Suzuki Y, et al. Interaction of Vitamin D Supplements and Marine n-3 Fatty Acids on Digestive Tract Cancer Prognosis. *Nutrients*. 2024 Mar 22;16(7):921. <https://doi.org/10.3390/nu16070921>. PMID: 38612957
- Huss L, Gulz-Haake I, Nilsson E, et al. The Vitamin D Receptor as a Prognostic Marker in Breast Cancer-A Cohort Study. *Nutrients*. 2024 Mar 23;16(7):931. <https://doi.org/10.3390/nu16070931>. PMID: 38612962
- Łabędź N, Anisiewicz A, Stachowicz-Suhs M, et al. Dual effect of vitamin D(3) on breast cancer-associated fibroblasts. *BMC Cancer*. 2024 Feb 15;24(1):209. <https://doi.org/10.1186/s12885-024-11961-z>. PMID: 38360633
- Li D, Su Y, Liu Y, et al. Comment on "Effects of vitamin D supplementation on inflammatory response in patients with cancer and precancerous lesions: Systematic review and meta-analysis of randomized trials". *Clin Nutr*. 2024 Apr;43(4):1075. <https://doi.org/10.1016/j.clnu.2023.11.034>. Epub 2023 Nov 30. PMID: 38049355
- Lindgren H, Ademi D, Godina C, et al. Potential interplay between tumor size and vitamin D receptor (VDR) polymorphisms in breast cancer prognosis: a prospective cohort study. *Cancer Causes Control*. 2024 Feb 14. <https://doi.org/10.1007/s10552-023-01845-1>. Online ahead of print. PMID: 38351438
- Mansilla-Polo M, Luque-Luna M, Morga do-Carrasco D. Vitamin D and Skin Cancer: A Controversial Society. Literature Update and Review. *Actas Dermosifiliogr*. 2024 Mar 29;S0001-7310(24)00265-5. <https://doi.org/10.1016/j.ad.2024.03.019>. Online ahead of print. PMID: 38556198
- Massa A, Isasi-Fuster A, Requena C, et al. Nodular type but not vitamin D levels increases the risk of second primary cancers in melanoma patients: An observational study of 663 patients. *Actas Dermosifiliogr*. 2024 Feb;115(2):143-149. <https://doi.org/10.1016/j.ad.2023.10.001>. Epub 2023 Oct 11. PMID: 37832865
- Massa A, Isasi-Fuster A, Requena C, et al. Nodular Type but Not Vitamin D Levels Increases the Risk of Second Primary Cancers in Melanoma Patients: An Observational Study of 663 Patients. *Actas Dermosifiliogr*. 2024 Feb;115(2):T143-T149. <https://doi.org/10.1016/j.ad.2023.10.038>. Epub 2023 Dec 2. PMID: 38048949
- Moldassarina RS, Manabayeva GK, Akyzhanova ZY, et al. Retraction Note: The importance of vitamin D in the diagnosis and treatment of adenomyosis. *Mol Cell Biochem*. 2024 Apr 13. <https://doi.org/10.1007/s11010-024-05007-y>. Online ahead of print. PMID: 38613639
- Peppone LJ, Kleckner AS, Fung C, et al. High-dose vitamin D to attenuate bone loss in patients with prostate cancer on androgen deprivation therapy: A phase 2 RCT. *Cancer*. 2024 Mar 23. <https://doi.org/10.1002/cncr.35275>. Online ahead of print. PMID: 38520382
- Piotrowska A, Nowak JI, Wierzbicka JM, et al. Fibroblast Growth Factor Receptor Inhibitors Decrease Proliferation of Melanoma Cell Lines and Their Activity Is Modulated by Vitamin D. *Int J Mol Sci*. 2024 Feb 21;25(5):2505. <https://doi.org/10.3390/ijms25052505>. PMID: 38473753
- Torres A, Cameselle C, Otero P, et al. The Impact of Vitamin D and Its Dietary Supplementation in Breast Cancer Prevention: An Integrative Review. *Nutrients*. 2024 Feb 20;16(5):573. <https://doi.org/10.3390/nu16050573>. PMID: 38474702
- Zemlin C, Altmayer L, Lang M, et al. Course of Vitamin D Levels in Newly Diagnosed Non-Metastatic Breast Cancer Patients over One Year with Quarter

ly Controls and Substitution. *Nutrients*. 2024 Mar 15;16(6):854. <https://doi.org/10.3390/nu16060854>. PMID: 38542765

- Zheng W, Peng W, Qian F, et al. Vitamin D suppresses CD133+/CD44 + cancer stem cell stemness by inhibiting NF-kappaB signaling and reducing NLRP3 expression in triple-negative breast cancer. *Cancer Chemother Pharmacol*. 2024 Mar 8. <https://doi.org/10.1007/s00280-024-04660-w>. Online ahead of print. PMID: 38456956

PEDIATRIA

- Aijaz A, Chaudhary P, Malawat K, et al. Clinical Correlation of Vitamin D Deficiency and Early Childhood Caries: A Cross-Sectional Study in Western Rajasthan. *J Pharm Bioallied Sci*. 2024 Feb;16(Suppl 1):S672-S674. https://doi.org/10.4103/jpbs.jpbs_932_23. Epub 2023 Dec 20. PMID: 38595598
- Al-Qerem W, Jarab A, Jarrar Y, et al. Correlation of vitamin D receptor genotypes, specific IgE levels and other variables with asthma control in children. *J Asthma*. 2024 Feb;61(2):105-118. <https://doi.org/10.1080/02770903.2023.2244580>. Epub 2023 Aug 9. PMID: 37530048
- Al-Qudah SA, Abu-Hussein LAA, Al Sbaïhi S. Maternal Awareness of Vitamin D Deficiency in Infants and Children Up to the Age of 6 Years: A Cross-sectional Study in Jordan. *Clin Pediatr (Phila)*. 2024 Mar;63(3):388-396. <https://doi.org/10.1177/00099228231175228>. Epub 2023 May 19. PMID: 37204118
- Almalki AH, Alaqel SI, Alharbi A, et al. Spectrofluorimetric determination of vitamin D in the serum of autistic and healthy children using functionalized graphene quantum dots. *Spectrochim Acta A Mol Biomol Spectrosc*. 2024 Mar 15;309:123842. <https://doi.org/10.1016/j.saa.2024.123842>. Epub 2024 Jan 3. PMID: 38181623
- Araujo-Moura K, Nascimento-Ferreira MV, Schaan B, et al. Serum Vitamin D Levels Mediate the Association Between Physical Activity and Blood Pressure in Adolescents. *J Phys Act Health*. 2024 Jan 22;21(4):333-340. <https://doi.org/10.1123/jpah.2022-0532>. Print 2024 Apr 1. PMID: 38253051
- Bahardoust M, Salari S, Ghoïbi N, et al. Association between prenatal vitamin D deficiency with dental caries in infants and children: a systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2024 Apr 8;24(1):256. <https://doi.org/10.1186/s12884-024-06477-0>. PMID: 38589811
- Bailey KRF, Pettersen JA. Vitamin D is associated with visual memory in young northern adolescents. *Nutr Neurosci*. 2024 Apr;27(4):392-403. <https://doi.org/10.1080/1028415X.2023.2199498>. Epub 2023 Apr 8. PMID: 37029691
- Bandyopadhyay S, Jain N, Bandyopadhyay A. Anaesthetic concerns of a child with symptomatic vitamin D deficiency rickets with secondary hyperparathyroidism: A case report. *J Perioper Pract*. 2024 Apr 12:17504589241242229. <https://doi.org/10.1177/17504589241242229>. Online ahead of print. PMID: 38606917
- Banks L, Kelly NA, Onwuka A, et al. Does preoperative calcium and 1, 25 OH vitamin D supplementation impact postoperative hypocalcemia and length of stay following pediatric thyroidectomy? *Int J Pediatr Otorhinolaryngol*. 2024 Mar;178:111895. <https://doi.org/10.1016/j.ijporl.2024.111895>. Epub 2024 Feb 12. PMID: 38422761
- Biçer GY, Yılmaz Öztörün Z, Biçer KE, et al. Analysis of pupillary responses in pediatric patients with vitamin D deficiency. *Graefes Arch Clin Exp Ophthalmol*. 2024 Feb 28. <https://doi.org/10.1007/s00417-024-06428-7>. Online ahead of print. PMID: 38416236
- Borutzky A, Iturriaga C, Pérez-Mateluna G, et al. Effect of weekly vitamin D supplementation on the severity of atopic dermatitis and type 2 immunity biomarkers in children: A randomized controlled trial. *J Eur Acad Dermatol Venereol*. 2024 Mar 14. <https://doi.org/10.1111/jdv.19959>. Online ahead of print. PMID: 38483248
- Bouillon R, Antonio L, Narinx N. Vitamin D status in children. *J Pediatr (Rio J)*. 2024 Apr 8:S0021-7557(24)00037-8. <https://doi.org/10.1016/j.jped.2024.04.001>. Online ahead of print. PMID: 38604241
- Brustad N, Chawes B. Vitamin D Primary Prevention of Respiratory Infections and Asthma in Early Childhood: Evidence and Mechanisms. *J Allergy Clin Immunol Pract*. 2024 Feb 14:S2213-2198(24)00161-2. <https://doi.org/10.1016/j.jaip.2024.02.005>. Online ahead of print. PMID: 38360214
- Calcaterra V, Cena H, De Giuseppe R, et al. An Adapted Questionnaire Tailored for Assessing the Risk of Vitamin D Deficiency in Children That Is Proving Useful in Guiding Clinical Interventions. *Nutrients*. 2024 Mar 27;16(7):971. <https://doi.org/10.3390/nu16070971>. PMID: 38613005
- Çalışkan M, Dabak M, Tümer KÇ. Corrigendum to "The relationship between serum cytokine profile and vitamin D in calves with neonatal diarrhea" [Cytokine 165 (2023) 156173]. *Cytokine*. 2024 Jun;178:156566. <https://doi.org/10.1016/j.cyto.2024.156566>. Epub 2024 Mar 13. PMID: 38480034
- Carboo JA, Dolman-Macleod RC, Malan L, et al. High-dose oral vitamin D supplementation for prevention of infections in children aged 0 to 59 months: a systematic review and meta-analysis. *Nutr Rev*. 2024 Apr 12;82(5):579-599. <https://doi.org/10.1093/nutrit/nuad082>. PMID: 37428896
- Cirstoveanu C, Ionita I, Georgescu C, et al. Intermittent High-Dose Vitamin D3 Administration in Neonates with Multiple Comorbidities and Vitamin D Insufficiency. *Children (Basel)*. 2024 Mar 9;11(3):328. <https://doi.org/10.3390/children11030328>. PMID: 38539363
- Clemente MG, Argiolas D, Bassu S, et al. Vitamin D Status in an Italian Pediatric Cohort: Is There a Role for Tobacco Smoking Exposure? *J Clin Res Pediatr Endocrinol*. 2024 Mar 25. <https://doi.org/10.4274/jcrpe.galenos.2024.2023-11-16>. Online ahead of print. PMID: 38523346
- Darnifayanti D, Rizki DR, Amirah S, et al. Association between vitamin D receptor gene variants and neonatal sepsis: A systematic review and meta-analysis. *J Infect Public Health*. 2024 Mar;17(3):518-526. <https://doi.org/10.1016/j.jiph.2024.01.011>. Epub 2024 Jan 17. PMID: 38306913
- de Brito Chagas J, Cordinhã C, do Carmo C, et al. Vitamin D-Dependent Rickets Type 1A in Two Siblings with a Hypomorphic CYP27B1 Variant Frequent in the African Population. *J Pediatr Genet*. 2021 Oct 25;13(1):43-49. <https://doi.org/10.1055/s-0041-1736559>. eCollection 2024 Mar. PMID: 38567179
- De Crem C, Van Winckel M, Vandenplas Y, et al. Self-reported prescribing behaviour

- of vitamin D prophylaxis in healthy children by Belgian paediatricians. *Eur J Clin Nutr.* 2024 Apr;78(4):295-300. <https://doi.org/10.1038/s41430-023-01387-4>. Epub 2024 Jan 3. PMID: 38172347
- Devulapalli CS. Vitamin D concentrations were often insufficient among native Norwegian adolescents and children with a non-Western immigrant background. *Acta Paediatr.* 2024 Mar;113(3):411-416. <https://doi.org/10.1111/apa.17078>. Epub 2023 Dec 20. PMID: 38116881
 - Ding YJ, Li XN, Xiao Z, et al. Low vitamin D during pregnancy is associated with infantile eczema by up-regulation of PI3K/AKT/mTOR signaling pathway and affecting FOXP3 expression: A bidirectional cohort study. *J Nutr Biochem.* 2024 Feb;124:109516. <https://doi.org/10.1016/j.jnutbio.2023.109516>. Epub 2023 Nov 2. PMID: 37925089
 - Durá-Travé T, Gallinas-Victoriano F. Dental caries in children and vitamin D deficiency: a narrative review. *Eur J Pediatr.* 2024 Feb;183(2):523-528. <https://doi.org/10.1007/s00431-023-05331-3>. Epub 2023 Nov 15. PMID: 37966493
 - Eslami O, Cuskelly GJ, O'Connor Á. Adherence to vitamin D supplementation guidelines in children under five years of age: a systematic literature review. *Eur J Nutr.* 2024 Feb;63(1):79-92. <https://doi.org/10.1007/s00394-023-03255-0>. Epub 2023 Oct 4. PMID: 37792100
 - Farahbakhsh N, Sharma D, Fatahi S, et al. Effects of Vitamin D and E Supplementation on Prevention of Bronchopulmonary Dysplasia (BPD) in Premature Neonates: A Systematic Review and Meta-Analysis. *Curr Pediatr Rev.* 2024 Apr 15. <https://doi.org/10.2174/0115733963279420240402083916>. Online ahead of print. PMID: 38629361
 - Feketea G, Vassilopoulou E, Andreescu O, et al. Vitamin D Level and Immune Modulation in Children with Recurrent Wheezing. *Children (Basel).* 2024 Feb 8;11(2):219. <https://doi.org/10.3390/children11020219>. PMID: 38397331
 - Gao Y, Zhang Y, Luo J, et al. Effect modification by maternal vitamin D status in the association between prenatal exposure to per- and polyfluoroalkyl substances and neurodevelopment in 2-year-old children. *Environ Int.* 2024 Mar;185:108563. <https://doi.org/10.1016/j.envint.2024.108563>. Epub 2024 Mar 5. PMID: 38461776
 - Garg D, Bhalla K, Nanda S, et al. Vitamin D status in children with community acquired pneumonia and its association with severity: a hospital-based study. *Minerva Pediatr (Torino).* 2024 Apr;76(2):227-235. <https://doi.org/10.23736/S2724-5276.21.06036-9>. Epub 2021 Apr 12. PMID: 33845559
 - Gülşen M, Özçay F, Barış Z, et al. Evaluation of Vitamin D Levels in Children With Liver Transplant. *Exp Clin Transplant.* 2024 Feb;22(2):129-136. <https://doi.org/10.6002/ect.2023.0075>. Epub 2023 Jul 12. PMID: 37486032
 - Hajhashemy Z, Tirani SA, Askari G, et al. The association between serum vitamin D levels and abnormal lipid profile in pediatric: A GRADE-assessed systematic review and dose-response meta-analysis of epidemiologic studies. *Nutr Rev.* 2024 Apr 3:nuae020. <https://doi.org/10.1093/nutrit/nuae020>. Online ahead of print. PMID: 38568958
 - Hong X, Jiang M, Kho AT, et al. Circulating miRNAs associate with historical childhood asthma hospitalization in different serum vitamin D groups. *Respir Res.* 2024 Mar 8;25(1):118. <https://doi.org/10.1186/s12931-024-02737-x>. PMID: 38459594
 - Indolfi C, Klain A, Dinardo G, et al. Mini-Review on Vitamin D in Pediatric Population and its Role in Respiratory and Atopic Disorders. *Mini Rev Med Chem.* 2024 Feb 20. <https://doi.org/10.2174/0113895575284873240212045431>. Online ahead of print. PMID: 38415448
 - Jackmann N, Gustafsson J, Utriainen P, et al. Demographic and disease-related factors impact bone turnover and vitamin D in children with hemato-oncological diseases. *JBMR Plus.* 2024 Feb 24;8(4):ziae017. <https://doi.org/10.1093/jbmrpl/ziae017>. eCollection 2024 Apr. PMID: 38523666
 - Jiang X, Xia L, Tang T, et al. Decreased vitamin D bio-availability with altered DNA methylation of its metabolism genes in association with the metabolic disorders among the school-aged children with degree I, II, and III obesity. *J Nutr Biochem.* 2024 Mar 29;129:109627. <https://doi.org/10.1016/j.jnutbio.2024.109627>. Online ahead of print. PMID: 38555074
 - Kanouse A, Nwosu BU, Salemi P. Case Report: Severe vitamin D deficiency in a girl with inflammatory myopathy and myonecrosis. *Front Pediatr.* 2024 Feb 12;12:1339875. <https://doi.org/10.3389/fped.2024.1339875>. eCollection 2024. PMID: 38410767
 - Kokkinari A, Dagla M, Antoniou E, et al. Are Maternal Vitamin D (25(OH)D) Levels a Pre-disposing Risk Factor for Neonatal Growth? A Cross-Sectional Study. *Clin Pract.* 2024 Feb 5;14(1):265-279. <https://doi.org/10.3390/clinpract14010021>. PMID: 38391407
 - Lavassani E, Tauber KA, Cerone JB, et al. Human milk-derived versus bovine milk-derived fortifier use in very low birth weight infants: growth and vitamin D status. *Front Pediatr.* 2024 Feb 19;12:1354683. <https://doi.org/10.3389/fped.2024.1354683>. eCollection 2024. PMID: 38445079
 - Lazarus G, Putra IGNS, Junaidi MC, et al. The relationship of vitamin D deficiency and childhood diarrhea: a systematic review and meta-analysis. *BMC Pediatr.* 2024 Feb 16;24(1):125. <https://doi.org/10.1186/s12887-024-04599-0>. PMID: 38365626
 - Levailant L, Linglart A, Gajdos V, et al. Reference values for serum calcium in neonates should be established in a population of vitamin D-replete subjects. *J Clin Endocrinol Metab.* 2024 Mar 13:dgae167. <https://doi.org/10.1210/clinem/dgae167>. Online ahead of print. PMID: 38477546
 - Lu M, Gan H, Zhou Q, et al. Trimester-specific effect of maternal co-exposure to organophosphate esters and phthalates on preschooler cognitive development: The moderating role of gestational vitamin D status. *Environ Res.* 2024 Mar 3;251(Pt 1):118536. <https://doi.org/10.1016/j.envres.2024.118536>. Online ahead of print. PMID: 38442813
 - Middelkoop K, Micklesfield L, Stewart J, et al. Influence of vitamin D supplementation on growth, body composition, pubertal development and spirometry in South African schoolchildren: a randomised controlled trial (ViDiKids). *BMJ Paediatr Open.* 2024 Apr 10;8(1):e002495. <https://doi.org/10.1136/bmjpo-2024-002495>. PMID: 38599800
 - Mittal J, Rajvanshi N, Suvarna K, et al. Association of vitamin D with disease severity in infants with bronchiolitis. *Eur*

- J Pediatr. 2024 Mar 26. <https://doi.org/10.1007/s00431-024-05513-7>. Online ahead of print. PMID: 38530447
- Monagel DA, Albaity AO, Asiri FM, et al. Vitamin D Deficiency in Pediatric Oncology Patients: A Single-Center Experience in Saudi Arabia. *Cureus*. 2024 Feb 24;16(2):e54807. <https://doi.org/10.7759/cureus.54807>. eCollection 2024 Feb. PMID: 38529460
 - O'Sullivan B, Ounpraseuth S, James L, et al. Vitamin D Oral Replacement in Children With Obesity Related Asthma: VDORA1 Randomized Clinical Trial. *Clin Pharmacol Ther*. 2024 Feb;115(2):231-238. <https://doi.org/10.1002/cpt.3086>. Epub 2023 Nov 28. PMID: 37926939
 - Öner N, Çelikel E, Tekin ZE, et al. The effect of vitamin D supplementation on attacks in PFAPA syndrome patients with low vitamin D levels. *Ir J Med Sci*. 2024 Apr;193(2):823-830. <https://doi.org/10.1007/s11845-023-03555-8>. Epub 2023 Oct 23. PMID: 37870706
 - Pahari S, Kunwar P, Acharya S, et al. Pseudotumor cerebri with status epilepticus in a child: A rare presentation of vitamin D deficiency. *Clin Case Rep*. 2024 Mar 26;12(4):e8695. <https://doi.org/10.1002/ccr3.8695>. eCollection 2024 Apr. PMID: 38550743
 - Paw D, Bokinić R, Kołodziejczyk-Nowotarska A. High Initial Dose of Monitored Vitamin D Supplementation in Preterm Infants (HIDVID Trial): Study Protocol for a Randomized Controlled Study. *Nutrients*. 2024 Feb 29;16(5):700. <https://doi.org/10.3390/nu16050700>. PMID: 38474827
 - Peng L, Liu T, Han C, et al. Relation between Polygenic Risk Score, Vitamin D Status and BMI-for-Age z Score in Chinese Preschool Children. *Nutrients*. 2024 Mar 11;16(6):792. <https://doi.org/10.3390/nu16060792>. PMID: 38542703
 - Percival MA, Anderson KB, Pasco JA, et al. Gestational vitamin D and offspring fracture risk: do associations persist into mid adolescence? *Eur J Clin Nutr*. 2024 Mar 1. <https://doi.org/10.1038/s41430-024-01421-z>. Online ahead of print. PMID: 38429375
 - Prabhakar P, Faridi MMA, Aggarwal A, et al. Effect of Antenatal Oral Vitamin D Supplementation on Serum 25(OH)D Concentration in Exclusively Breastfed Infants at 6 Months of age - A Randomized Double-Blind Placebo-Controlled Trial. *Indian Pediatr*. 2024 Apr 5:S097475591600632. Online ahead of print. PMID: 38584410
 - Prusty N, Peela SY, Manaf H, et al. Vitamin D Levels Assessment among the Neonates with and without Seizures: A Single Center Cross-Sectional Study. *J Pharm Bioallied Sci*. 2024 Feb;16(Suppl 1):S293-S295. https://doi.org/10.4103/jpbs.jpbs_497_23. Epub 2024 Feb 29. PMID: 38595514
 - Radonsky V, Lazaretti-Castro M, Chiamolera MI, et al. Alert for the high prevalence of vitamin D deficiency in adolescents in a large Brazilian sample. *J Pediatr (Rio J)*. 2024 Mar 7:S0021-7557(24)00018-4. <https://doi.org/10.1016/j.jped.2024.01.003>. Online ahead of print. PMID: 38462231
 - Ramirez LG, Lee-Sarwar K, Kelly RS, et al. Association of Prenatal Maternal and Infant Vitamin D Supplementation with Offspring Asthma. *Ann Am Thorac Soc*. 2024 Feb;21(2):279-286. <https://doi.org/10.1513/AnnalsATS.202306-504OC>. PMID: 38054759
 - Rios-Leyvraz M, Thacher TD, Dabas A, et al. Serum 25-hydroxyvitamin D threshold and risk of rickets in young children: a systematic review and individual participant data meta-analysis to inform the development of dietary requirements for vitamin D. *Eur J Nutr*. 2024 Apr;63(3):673-695. <https://doi.org/10.1007/s00394-023-03299-2>. Epub 2024 Jan 27. PMID: 38280944
 - Rubio Sánchez P, Ferrer Lozano M. Vitamin D deficiency as cause of rickets in a patient of African origin. *An Pediatr (Engl Ed)*. 2024 Apr 3:S2341-2879(24)00084-X. <https://doi.org/10.1016/j.anpede.2024.03.029>. Online ahead of print. PMID: 38575472
 - Shen CH, Chen CB, Chiang MH, et al. Vitamin D level is inversely related to allergen sensitization for risking atopic dermatitis in early childhood. *World Allergy Organ J*. 2024 Mar 29;17(4):100890. <https://doi.org/10.1016/j.waojou.2024.100890>. eCollection 2024 Apr. PMID: 38585333
 - Singh A, Singh N. Vitamin D intervention as a curative measure for glucose intolerance in obese children and adolescents: a systematic review on randomized control trials. *Eur J Pediatr*. 2024 Apr;183(4):1475-1483. <https://doi.org/10.1007/s00431-023-05407-0>. Epub 2024 Jan 11. PMID: 38206398
 - Suksantilerd S, Thawatchai R, Rungrattananon N. Prevalence of vitamin D deficiency in exclusively breastfed infants at Charoenkong Pracharak Hospital. *World J Clin Pediatr*. 2024 Mar 9;13(1):86693. <https://doi.org/10.5409/wjcp.v13.i1.86693>. eCollection 2024 Mar 9. PMID: 38596439
 - Sun J, Wang W, Xiao Y, et al. Correlation between serum vitamin D level and uterine volume in girls with idiopathic central precocious puberty. *J Pediatr Endocrinol Metab*. 2023 Dec 21;37(2):144-149. <https://doi.org/10.1515/jpem-2023-0381>. Print 2024 Feb 26. PMID: 38114464
 - Sun Y, Zhou Q, Tian D, et al. Relationship between vitamin D levels and pediatric celiac disease: a systematic review and meta-analysis. *BMC Pediatr*. 2024 Mar 16;24(1):185. <https://doi.org/10.1186/s12887-024-04688-0>. PMID: 38491474
 - Tabassum N, Anwar KS, Sarkar PK, et al. Vitamin D [Serum 25(OH) cholecalciferol] Insufficiency is Associated With Childhood Asthma: Recent Case-Control Findings From Bangladesh. *Glob Pediatr Health*. 2024 Apr 3;11:2333794X241240574. <https://doi.org/10.1177/2333794X241240574>. eCollection 2024. PMID: 38577660
 - Tsang HW, Tung KTS, Wong RS, et al. Association of vitamin D-binding protein polymorphisms and serum 25(OH)D concentration varies among Chinese healthy infants of different VDR-FokI genotypes: A multi-centre cross-sectional study. *Nutr Bull*. 2024 Mar;49(1):63-72. <https://doi.org/10.1111/nbu.12656>. Epub 2023 Dec 26. PMID: 38146611
 - Van de Walle L, Vandenplas Y, Toelen J, et al. Vitamin D Status in Belgian Children: A Regional Study. *Nutrients*. 2024 Feb 26;16(5):657. <https://doi.org/10.3390/nu16050657>. PMID: 38474785
 - Vernon-Roberts A, Day AS; PEDiatric Australasian Gastroenterology REsearch Network (PEDAGREE). Patterns of vitamin D testing and supplementation for children with inflammatory bowel disease in Australasia. *JGH Open*. 2024 Mar 4;8(3):e13041. <https://doi.org/10.1002/jgh3.13041>. eCollection 2024 Mar. PMID: 38444634

- Weiler HA, Rana H, McCrea J, et al. Adherence to Vitamin D Supplementation Recommendations for Breastfed Infants and Young Children: An Analysis of Canadian Community Health Survey Data Cycles From 2015 to 2018. *J Nutr.* 2024 Mar 26;S0022-3166(24)00165-2. <https://doi.org/10.1016/j.tjnut.2024.03.016>. Online ahead of print. PMID: 38527736
- Weiss ST, Mirzakhani H, Carey VJ, et al. Prenatal vitamin D supplementation to prevent childhood asthma: 15-year results from the Vitamin D Antenatal Asthma Reduction Trial (VDAART). *J Allergy Clin Immunol.* 2024 Feb;153(2):378-388. <https://doi.org/10.1016/j.jaci.2023.10.003>. Epub 2023 Oct 16. PMID: 37852328
- Wu QH, Chen Q, Yang T, et al. [A survey on the current situation of serum vitamin A and vitamin D levels among children aged 2-<7 years of 20 cities in China]. *Zhonghua Er Ke Za Zhi.* 2024 Mar 2;62(3):231-238. <https://doi.org/10.3760/cma.j.cn112140-20230923-00216>. PMID: 38378284
- Yang X, Chai M, Lin M. Proportion of vitamin D deficiency in children/adolescents with type 1 diabetes: a systematic review and meta-analysis. *BMC Pediatr.* 2024 Mar 16;24(1):192. <https://doi.org/10.1186/s12887-024-04683-5>. PMID: 38493103
- Zhong J, Martins DS, Piper HG. Standardizing vitamin D supplementation to minimize deficiency in children with intestinal failure. *Nutr Clin Pract.* 2024 Feb;39(1):177-183. <https://doi.org/10.1002/ncp.11094>. Epub 2023 Nov 29. PMID: 38030590
- Zhu L, Li S, Zhong L, et al. Optimal vitamin D supplement dosage for improving insulin resistance in children and adolescents with overweight/obesity: a systematic review and network meta-analysis. *Eur J Nutr.* 2024 Apr;63(3):763-775. <https://doi.org/10.1007/s00394-023-03301-x>. Epub 2023 Dec 30. PMID: 38160221
- status and variable responses to supplements depend in part on genetic factors in adults with cystic fibrosis. *J Cyst Fibros.* 2024 Feb 20;S1569-1993(24)00020-1. <https://doi.org/10.1016/j.jcf.2024.02.005>. Online ahead of print. PMID: 38383231
- Chandra H, Rahman A, Yadav P, et al. Effect of adjunct Vitamin D treatment in vitamin D deficient pulmonary tuberculosis patients: A randomized, double blind, active controlled clinical trial. *Indian J Tuberc.* 2024 Apr;71(2):170-178. <https://doi.org/10.1016/j.ijtub.2023.04.026>. Epub 2023 Apr 29. PMID: 38589121
- El Abd A, Dasari H, Dodin P, et al. The effects of vitamin D supplementation on inflammatory biomarkers in patients with asthma: a systematic review and meta-analysis of randomized controlled trials. *Front Immunol.* 2024 Mar 13;15:1335968. <https://doi.org/10.3389/fimmu.2024.1335968>. eCollection 2024. PMID: 38545098
- Escobedo-Monge MF, Marcos-Temprano M, Parodi-Román J, et al. Calcium, Phosphorus, and Vitamin D Levels in a Series of Cystic Fibrosis Patients: A Cross-Sectional Study. *Int J Mol Sci.* 2024 Feb 5;25(3):1900. <https://doi.org/10.3390/ijms25031900>. PMID: 38339178
- He Q, Hu S, Xie J, et al. Vitamin D supplementation may be beneficial in improving the prognosis of patients with chronic obstructive pulmonary disease in the intensive care unit: a retrospective study. *Front Med (Lausanne).* 2024 Mar 22;11:1334524. <https://doi.org/10.3389/fmed.2024.1334524>. eCollection 2024. PMID: 38585148
- Kechribari I, Kontogianni MD, Georgoulis M, et al. Associations between Vitamin D Status and Polysomnographic Parameters in Adults with Obstructive Sleep Apnea. *Life (Basel).* 2024 Feb 18;14(2):275. <https://doi.org/10.3390/life14020275>. PMID: 38398784
- Loh HH, Sukor N. Obstructive sleep apnea and vitamin D level: Has the dust settled? *Clin Respir J.* 2024 Mar;18(3):e13593. <https://doi.org/10.1111/crj.13593>. Epub 2023 Feb 6. PMID: 36746181
- Panda S, Tiwari A, Kumar V, et al. Protective Role of Vitamin D Against Development of Active Tuberculosis in Close Household Contacts of Pulmonary Tuberculosis Patients: A Prospective Cohort Study. *Indian J Clin Biochem.* 2024 Apr;39(2):248-256. <https://doi.org/10.1007/s12291-022-01110-3>. Epub 2023 Jan 12. PMID: 38577148
- Paramonova N, Trapina I, Gradauskiene Sitkauskiene B, et al. Genetic Diversity in Bronchial Asthma Susceptibility: Exploring the Role of Vitamin D Receptor Gene Polymorphisms in Varied Geographic Contexts. *Int J Mol Sci.* 2024 Feb 5;25(3):1943. <https://doi.org/10.3390/ijms25031943>. PMID: 38339221
- Perez-Vizcaino F, Barberá JA, Rodríguez Chiaradía DA. Vitamin D and Pulmonary Arterial Hypertension. *Arch Bronconeumol.* 2024 Mar;60(3):131-132. <https://doi.org/10.1016/j.arbres.2023.11.006>. Epub 2023 Nov 9. PMID: 38008680
- Queiroz DJM, Silva AS, da Silva Júnior CC, et al. Influence of the Bsm1 polymorphism of the vitamin D receptor gene on the levels of vitamin D, inflammatory and oxidative stress profile in patients with cystic fibrosis supplemented with Colecalciferol megadose. *Clin Nutr ESPEN.* 2024 Apr;60:139-145. <https://doi.org/10.1016/j.clnesp.2024.01.009>. Epub 2024 Jan 17. PMID: 38479902
- Sharma S, Garg M. Investigating the role of vitamin D in asthma. *Elife.* 2024 Apr 3;13:e97031. <https://doi.org/10.7554/elife.97031>. PMID: 38567741
- Simanek V, Dedeckova E, Topolcan O, et al. A Case Study of Vitamin D Supplementation Therapy and Acute Respiratory Tract Infection. *In Vivo.* 2024 Mar-Apr;38(2):949-953. <https://doi.org/10.21873/invivo.13525>. PMID: 38418127
- Sivapiromrat AK, Hunt WR, Alvarez JA, et al. Vitamin D for glycemic control following an acute pulmonary exacerbation: A secondary analysis of a multicenter, double-blind, randomized, placebo-controlled trial in adults with cystic fibrosis. *medRxiv [Preprint].* 2024 Mar 10:2024.01.04.24300862. <https://doi.org/10.1101/2024.01.04.24300862>. PMID: 38343807
- Sivapiromrat AK, Suppakitjanusant P, Wang Y, et al. Vitamin D and prebiotics for intestinal health in cystic fibrosis: Rationale and design for a randomized, placebo-controlled, double-blind, 2 x 2 trial of administration of prebiotics and cholecalciferol (vitamin D(3)) (Pre-D trial) in adults with cystic fibrosis. *medRxiv [Preprint].* 2024 Mar 10:2024.01.04.24300862. <https://doi.org/10.1101/2024.01.04.24300862>. PMID: 38343807

PNEUMOLOGIA

- Archontogeorgis K, Economou NT, Bargiotas P, et al. Sleepiness and Vitamin D Levels in Patients with Obstructive Sleep Apnea. *Healthcare (Basel).* 2024 Mar 21;12(6):698. <https://doi.org/10.3390/healthcare12060698>. PMID: 38540662
- Braun AT, Lai HJ, Laxova A, et al. Vitamin D

- tic fibrosis. *Contemp Clin Trials Commun.* 2024 Feb 18;38:101278. <https://doi.org/10.1016/j.conctc.2024.101278>. eCollection 2024 Apr. PMID: 38435430
- Wang H, Ge C, Zhang Z, et al. Effects of physical activity and sedentary behavior on serum vitamin D in patients with chronic obstructive pulmonary disease. *Adv Clin Exp Med.* 2024 Mar 20. <https://doi.org/10.17219/acem/175815>. Online ahead of print. PMID: 38506415
 - Yao N, Ma C, Dou R, et al. Exploring the link between vitamin D deficiency and obstructive sleep apnea: A comprehensive review. *J Sleep Res.* 2024 Feb 27:e14166. <https://doi.org/10.1111/jsr.14166>. Online ahead of print. PMID: 38414320
 - Yerezhpov D, Gabdulkayum A, Akhmetova A, et al. Vitamin D Status, VDR, and TLR Polymorphisms and Pulmonary Tuberculosis Epidemiology in Kazakhstan. *Nutrients.* 2024 Feb 17;16(4):558. <https://doi.org/10.3390/nu16040558>. PMID: 38398882
- PSICHIATRIA**
- [No authors listed] Correction to: Genome-wide Association Analysis of Schizophrenia and Vitamin D Levels Shows Shared Genetic Architecture and Identifies Novel Risk Loci. *Schizophr Bull.* 2024 Mar 7;50(2):484. <https://doi.org/10.1093/schbul/sbad150>. PMID: 37991982
 - Arabshahi V, Khoddami M, Milajerdi M, et al. Association between dietary intake of vitamin D and risk of depression, anxiety, and sleep disorders among physically active adults: a cross-sectional study. *Front Nutr.* 2024 Feb 8;11:1339152. <https://doi.org/10.3389/fnut.2024.1339152>. eCollection 2024. PMID: 38389792
 - Cui J, Wang S, Zhai Z, et al. Induction of autism-related behavior in male mice by early-life vitamin D deficiency: association with disruption of the gut microbial composition and homeostasis. *Food Funct.* 2024 Mar 27. <https://doi.org/10.1039/d4fo00279b>. Online ahead of print. PMID: 38533674
 - da Silva Sabião T, Alves de Menezes Júnior LA, Batista AP, et al. Interaction between FokI polymorphism and vitamin D deficiency in the symptoms of mental disorders in adults: a population-based study. *Cardoso Carraro JC. Sci Rep.* 2024 Mar 22;14(1):6925. <https://doi.org/10.1038/s41598-024-57558-1>. PMID: 38519539
 - Diaz-Amaya Y, Star Z, McClure ST. Food security and diet quality, not vitamin D status are significantly associated with depression: Results from NHANES 2015-2018. *J Affect Disord.* 2024 Feb 15;347:150-155. <https://doi.org/10.1016/j.jad.2023.11.071>. Epub 2023 Nov 22. PMID: 38000464
 - Fallah A, Abdolazimi H, Karamizadeh M, et al. Night eating habits, sleep quality, and depression, are they associated with vitamin D status? *Clin Nutr ESPEN.* 2024 Feb;59:113-117. <https://doi.org/10.1016/j.clnesp.2023.11.020>. Epub 2023 Nov 30. PMID: 38220363
 - Gilbert L, Bourgeois A, Karras SN, et al. Vitamin D and behavioral disorders in older adults: results from the CLIP study. *J Nutr Health Aging.* 2024 Mar 8;28(4):100205. <https://doi.org/10.1016/j.jnha.2024.100205>. Online ahead of print. PMID: 38460211
 - Kacar M, Erzurum Alim N. The dietary risk factors on cancer patients receiving chemotherapy and correlation between serum vitamin D and B12 levels, depression and anxiety status. *Nutr Hosp.* 2024 Feb 15;41(1):112-121. <https://doi.org/10.20960/nh.04530>. PMID: 37073746
 - Menezes Júnior LAA, Sabião TDS, Moura SS, et al. The role of interaction between vitamin D and VDR FokI gene polymorphism (rs2228570) in sleep quality of adults. *Sci Rep.* 2024 Apr 7;14(1):8141. <https://doi.org/10.1038/s41598-024-58561-2>. PMID: 38584183
 - Mohammadi A, Sadighi G, Nazeri Astaneh A, et al. Co-administration of probiotic and vitamin D significantly improves cognitive function in schizophrenic patients: A double-blinded randomized controlled trial. *Neuropsychopharmacol Rep.* 2024 Apr 10. <https://doi.org/10.1002/npr2.12431>. Online ahead of print. PMID: 38598329
 - Rajasekar R, VanderMolen J, Barnhart K, et al. Dietary intake with supplementation of vitamin D, vitamin B6, and magnesium on depressive symptoms: a public health perspective. *Front Public Health.* 2024 Mar 27;12:1369666. <https://doi.org/10.3389/fpubh.2024.1369666>. eCollection 2024. PMID: 38605872
 - Rebello CJ. Vitamin D and Depression: Racial Differences Suggest an Alternate Bio- marker. *Am J Geriatr Psychiatry.* 2024 Feb 28:S1064-7481(24)00262-8. <https://doi.org/10.1016/j.jagp.2024.02.008>. Online ahead of print. PMID: 38443297
 - Renteria K, Nguyen H, Koh GY. The role of vitamin D in depression and anxiety disorders: a review of the literature. *Nutr Neurosci.* 2024 Mar;27(3):262-270. <https://doi.org/10.1080/1028415X.2023.2186318>. Epub 2023 Mar 6. PMID: 36877601
 - Renteria KM, Constantine E, Teoh CM, et al. Combination of vitamin D(3) and fructooligosaccharides upregulates colonic vitamin D receptor in C57BL/6j mice and affects anxiety-related behavior in a sex-specific manner. *Nutr Res.* 2024 Feb 11;125:16-26. <https://doi.org/10.1016/j.nutres.2024.02.003>. Online ahead of print. PMID: 38432179
 - Tsiglopoulos J, Pearson N, Mifsud N, et al. The prevalence of vitamin D deficiency and associated factors in first-episode psychosis. *Early Interv Psychiatry.* 2024 Mar;18(3):237-242. <https://doi.org/10.1111/eip.13465>. Epub 2023 Sep 12. PMID: 37700506
 - Turhan NÖ, Arisoy Ö, Ulaş F, et al. Vitamin D: An Overlooked Parameter in Studies of Depression Using Optic Coherence Tomography. *Noro Psikiyatrs Ars.* 2024 Feb 24;61(1):66-72. <https://doi.org/10.29399/npa.28369>. eCollection 2024. PMID: 38496230
 - Wen Z, Bai L, Wu S, et al. Association of serum vitamin D with anxiety in US adults: a cross-sectional study. *Front Nutr.* 2024 Mar 14;11:1371170. <https://doi.org/10.3389/fnut.2024.1371170>. eCollection 2024. PMID: 38549749
 - Wijnia JW, Wierdsma AI, Oudman E, et al. Alcohol use disorder and muscle weakness: Original study of the effect of vitamin D supplementation in ambulatory participants with alcohol use disorder. *Alcohol.* 2024 Mar 4:S0741-8329(24)00037-5. <https://doi.org/10.1016/j.alcohol.2024.03.001>. Online ahead of print. PMID: 38447788
 - Zhang G, Li L, Kong Y, et al. Vitamin D-binding protein in plasma microglia-derived extracellular vesicles as a potential biomarker for major depressive disorder. *Genes Dis.* 2023 Apr 10;11(2):1009-1021. <https://doi.org/10.1016/j.gendis.2023.02.049>. eCollection 2024 Mar. PMID: 37692510

- Zhao W, Zhu DM, Shen Y, et al. The protective effect of vitamin D supplementation as adjunctive therapy to antidepressants on brain structural and functional connectivity of patients with major depressive disorder: a randomized controlled trial. *Psychol Med.* 2024 Mar 14;1-11. <https://doi.org/10.1017/S0033291724000539>. Online ahead of print. PMID: 38482853
 - Zhou J, Li D, Wang Y. Vitamin D Deficiency Participates in Depression of Patients with Diabetic Peripheral Neuropathy by Regulating the Expression of Pro-Inflammatory Cytokines. *Neuropsychiatr Dis Treat.* 2024 Feb 27;20:389-397. <https://doi.org/10.2147/NDT.S442654>. eCollection 2024. PMID: 38436043
- ## REUMATOLOGIA
- Akkurt Kocaeli A, Erturk E. Bone Mineral Density and Vitamin D Status in Patients with Autoimmune Polyglandular Syndromes: A Single Tertiary Care Center Experience. *Horm Metab Res.* 2024 Feb;56(2):128-133. <https://doi.org/10.1055/a-2205-2100>. Epub 2023 Nov 6. PMID: 37931915
 - Al-Saoodi H, Kolahdooz F, Andersen JR, et al. Effect of vitamin D on inflammatory and clinical outcomes in patients with rheumatoid arthritis: a systematic review and dose-response meta-analysis of randomized controlled trials. *Nutr Rev.* 2024 Apr 12;82(5):600-611. <https://doi.org/10.1093/nutrit/nuad083>. PMID: 37437898
 - Byun SE, Kim H, Lee SY, et al. Selective estrogen receptor modulators (SERMs) with vitamin D composite agent can prevent fracture better than SERMs treatment: based on the National Health Claims Database 2017-2019. *Osteoporos Int.* 2024 May;35(5):775-783. <https://doi.org/10.1007/s00198-024-07022-7>. Epub 2024 Jan 19. PMID: 38240755
 - Chou SH, Cook NR, Kotler G, et al. Effects of Supplemental Vitamin D3, Omega-3 Fatty Acids on Physical Performance Measures in Vitamin D and Omega-3 Trial. *J Clin Endocrinol Metab.* 2024 Mar 15:dgae150. <https://doi.org/10.1210/clinem/dgae150>. Online ahead of print. PMID: 38488491
 - Cieslewicz A, Korzeniowska K, Grabańska-Martyńska K, et al. Seasonal and Treatment-Related Variation in 25-Hydroxy Vitamin D Concentration in Patients with Rheumatoid Arthritis. *J Clin Med.* 2024 Feb 8;13(4):973. <https://doi.org/10.3390/jcm13040973>. PMID: 38398286
 - Das A, Jawla N, Meena V, et al. Lack of vitamin D signalling shifts skeletal muscles towards oxidative metabolism. *J Cachexia Sarcopenia Muscle.* 2024 Feb;15(1):67-80. <https://doi.org/10.1002/jcsm.13378>. Epub 2023 Dec 2. PMID: 38041597
 - di Filippo L, Ulivieri FM, Nuti R, et al. Use of vitamin D with anti-osteoporotic drugs: are available clinical trials telling us the whole story? *Endocrine.* 2024 Feb;83(2):342-348. <https://doi.org/10.1007/s12020-023-03551-z>. Epub 2023 Oct 10. PMID: 37815744
 - Dong YJ, Guo YF, Ruan Y, et al. [Association between vitamin D level and grip strength in adults aged 50 and older in Shanghai]. *Zhonghua Liu Xing Bing Xue Za Zhi.* 2024 Mar 10;45(3):393-400. <https://doi.org/10.3760/cma.j.cn112338-20230630-00409>. PMID: 38514316
 - Ersoy S, Kesiktas FN, Sirin B, et al. The effect of vitamin D treatment on quality of life in patients with fibromyalgia. *Ir J Med Sci.* 2024 Apr;193(2):1111-1116. <https://doi.org/10.1007/s11845-023-03521-4>. Epub 2023 Sep 14. PMID: 37707690
 - Falk SSI, Richter M, Schröder J, et al. Pre-existing osteoporosis and serum vitamin D levels in patients with distal radius fractures: are we missing something? *Arch Orthop Trauma Surg.* 2024 Mar;144(3):1281-1287. <https://doi.org/10.1007/s00402-024-05199-4>. Epub 2024 Feb 2. PMID: 38305894
 - Fitzpatrick D, Laird E, Ward M, et al. Secondary hyperparathyroidism: Predictors and relationship with vitamin D status, bone turnover markers and bone mineral density. *Bone.* 2024 Apr 18;184:117108. <https://doi.org/10.1016/j.bone.2024.117108>. Online ahead of print. PMID: 38642819
 - Fonte FK, Spinoza ED, Carvalho VA, et al. Relationship of protein, calcium and vitamin D consumption with body composition and fractures in oldest-old independent people. *Clin Nutr ESPEN.* 2024 Feb;59:398-403. <https://doi.org/10.1016/j.clnesp.2023.12.008>. Epub 2023 Dec 18. PMID: 38220402
 - García-Maldonado E, Gallego-Narbón A, Zapatera B, et al. Bone Remodelling, Vitamin D Status, and Lifestyle Factors in Spanish Vegans, Lacto-Ovo Vegetarians, and Omnivores. *Nutrients.* 2024 Feb 2;16(3):448. <https://doi.org/10.3390/nu16030448>. PMID: 38337732
 - Gu Y, Tang J, Zhang H, et al. MicroRNA-125b mediates Interferon-gamma-induced downregulation of the vitamin D receptor in systemic lupus erythematosus. *Z Rheumatol.* 2024 Feb;83(Suppl 1):132-139. <https://doi.org/10.1007/s00393-023-01319-4>. Epub 2023 Feb 2. PMID: 36732450
 - Hashimoto S, Hosoi T, Yakabe M, et al. Exercise-induced vitamin D receptor and androgen receptor mediate inhibition of IL-6 and STAT3 in muscle. *Biochem Biophys Res.* 2023 Dec 21;37:101621. <https://doi.org/10.1016/j.bbrep.2023.101621>. eCollection 2024 Mar. PMID: 38205185
 - Horas K, Maier G, Rudert M, et al. Vitamin D Deficiency Is Frequent in Patients with Rapidly Destructive Osteoarthritis-Data from a Single-Center Analysis. *J Clin Med.* 2024 Feb 25;13(5):1296. <https://doi.org/10.3390/jcm13051296>. PMID: 38592156
 - Hosoyama T, Kawai-Takaishi M, Iida H, et al. Lack of vitamin D signalling in mesenchymal progenitors causes fatty infiltration in muscle. *J Cachexia Sarcopenia Muscle.* 2024 Mar 27. <https://doi.org/10.1002/jcsm.13448>. Online ahead of print. PMID: 38533539
 - Islam MA, Ahmed S, Sultana S, et al. Vitamin D Status in Patients with Primary Antiphospholipid Syndrome (PAPS): A Systematic Review and Meta-Analysis. *Antibodies (Basel).* 2024 Mar 13;13(1):22. <https://doi.org/10.3390/antib13010022>. PMID: 38534213
 - Jiao D, Jiang C. Nutritional therapy of older osteoporotic people with supplemental calcium and vitamin D: side effects, fracture rates, and survival - an internationalised meta-analysis. *Asia Pac J Clin Nutr.* 2024 Mar;33(1):1-10. [https://doi.org/10.6133/apjcn.202403_33\(1\).0001](https://doi.org/10.6133/apjcn.202403_33(1).0001). PMID: 38494682
 - Kaspiris A, Vasiliadis E, Iliopoulos ID, et al. Bone mineral density, vitamin D and osseous metabolism indices in neurofibromatosis type 1: A systematic review and meta-anal-

- ysis. *Bone*. 2024 Mar;180:116992. <https://doi.org/10.1016/j.bone.2023.116992>. Epub 2023 Dec 21. PMID: 38141750
- Khadilkar A, Oza C, Antani M, et al. Effect of Calcium and Vitamin D Supplementation (Dairy vs. Pharmacological) on Bone Health of Underprivileged Indian Children and Youth with Type-1 Diabetes: A Randomized Controlled Trial. *J Clin Densitom*. 2024 Apr-Jun;27(2):101468. <https://doi.org/10.1016/j.jocd.2024.101468>. Epub 2024 Jan 26. PMID: 38325238
 - Krasniqi E, Boshnjaku A, Ukëhaxhaj A, et al. Association between vitamin D status, physical performance, sex, and lifestyle factors: a cross-sectional study of community-dwelling Kosovar adults aged 40 years and older. *Eur J Nutr*. 2024 Apr;63(3):821-834. <https://doi.org/10.1007/s00394-023-03303-9>. Epub 2024 Jan 9. PMID: 38196008
 - Latini A, De Benedittis G, Conigliaro P, et al. The rs11568820 Variant in the Promoter Region of Vitamin D Receptor Gene Is Associated with Clinical Remission in Rheumatoid Arthritis Patients Receiving Tumor Necrosis Factor Inhibitors. *Genes (Basel)*. 2024 Feb 12;15(2):234. <https://doi.org/10.3390/genes15020234>. PMID: 38397223
 - Liu AM, Mirlle V, Lee C, et al. Forgetting the Frail: National Trends in Vitamin D Prescription After Fragility Fracture-A Large Insurance Claims Database Study. *J Am Acad Orthop Surg*. 2024 Mar 13. <https://doi.org/10.5435/JAAOS-D-23-00932>. Online ahead of print. PMID: 38484091
 - Liu C, Seyok T, Moye S, et al. High rates of vitamin D insufficiency among patients presenting for total knee arthroplasty. *J Orthop Res*. 2024 Feb 27. <https://doi.org/10.1002/jor.25811>. Online ahead of print. PMID: 38414362
 - Liu ES, LeBoff MS. Editorial: the role of vitamin D metabolites in the evaluation of bone health: are they physiologically relevant? *J Bone Miner Res*. 2024 Mar 4;39(1):1-2. <https://doi.org/10.1093/jbmr/zjad012>. PMID: 38630885
 - Liu P, Zhou J, Cui H, et al. Vitamin D plays a protective role in osteoarthritis by regulating AMPK/mTOR signalling pathway to activate chondrocyte autophagy. *Clin Exp Rheumatol*. 2024 Mar;42(3):736-745. <https://doi.org/10.55563/clinexpheumatol/chmuts>. Epub 2023 Oct 19. PMID: 37877411
 - Middelkoop K, Micklesfield LK, Walker N, et al. Influence of vitamin D supplementation on bone mineral content, bone turnover markers, and fracture risk in South African schoolchildren: multicenter double-blind randomized placebo-controlled trial (ViDiKids). *J Bone Miner Res*. 2024 Apr 19;39(3):211-221. <https://doi.org/10.1093/jbmr/zjae007>. PMID: 38477739
 - Nirmal D, Abdul S, Jaiswal P, et al. Effect of duration of sodium valproate therapy on bone mineral density and vitamin D levels. *Epilepsy Behav*. 2024 Apr;153:109733. <https://doi.org/10.1016/j.yebeh.2024.109733>. Epub 2024 Mar 5. PMID: 38447300
 - Ong MT, Lu X, Choi BC, et al. Vitamin D as an intervention for improving quadriceps muscle strength in patients after anterior cruciate ligament reconstruction: study protocol for a randomized double-blind, placebo-controlled clinical trial. *Trials*. 2024 Apr 11;25(1):251. <https://doi.org/10.1186/s13063-024-08094-w>. PMID: 38605374
 - Oubouchou R, -Djeraba ZAA, Kemikem Y, et al. Immunomodulatory effect of vitamin D supplementation on Behçet's disease patients: effect on nitric oxide and Th17/Treg cytokines production. *Immunopharmacol Immunotoxicol*. 2024 Feb;46(1):1-10. <https://doi.org/10.1080/08923973.2023.2239490>. Epub 2023 Aug 3. PMID: 37535442
 - Park HJ, Kim MG, Yoo YS, et al. Correction to: Determination of the combined effects of asian herbal medicine with calcium and/or vitamin D supplements on bone mineral density in primary osteoporosis: A systematic review and meta-analysis. *Osteoporos Int*. 2024 Mar 21. <https://doi.org/10.1007/s00198-024-07065-w>. Online ahead of print. PMID: 38512462
 - Park HJ, Kim MG, Yoo YS, et al. Determination of the Combined Effects of Asian Herbal Medicine with Calcium and/or Vitamin D Supplements on Bone Mineral Density in Primary Osteoporosis: A Systematic Review and Meta-Analysis. *Osteoporos Int*. 2024 Mar 13. <https://doi.org/10.1007/s00198-024-07061-0>. Online ahead of print. PMID: 38472336
 - Rabiee Rad M, Ghasempour Dabaghi G, Afshari Safavi A, et al. Adjuvant Vitamin D Injection in Elderly Patients Before Intertrochanteric Fracture Surgery: A Randomised Controlled Trial. *Geriatr Orthop Surg Rehabil*. 2024 Mar 15;15:21514593231220769. <https://doi.org/10.1177/21514593231220769>. eCollection 2024. PMID: 38495917
 - Russo K, Hallare D, Lee D, et al. Comparative Clinical Effects and Risk Factors Associated With Vitamin D in Foot and Ankle Fracture and Arthrodesis Healing. *J Foot Ankle Surg*. 2024 Mar-Apr;63(2):182-186. <https://doi.org/10.1053/j.jfas.2023.10.005>. Epub 2023 Nov 4. PMID: 37931741
 - Sha S, Chen LJ, Brenner H, et al. Serum 25-Hydroxyvitamin D Status and Vitamin D Supplements Use Are Not Associated with Low Back Pain in the Large UK Biobank Cohort. *Nutrients*. 2024 Mar 12;16(6):806. <https://doi.org/10.3390/nu16060806>. PMID: 38542718
 - Soens MA, Sesso HD, Manson JE, et al. The effect of vitamin D and omega-3 fatty acid supplementation on pain prevalence and severity in older adults: a large-scale ancillary study of the VITamin D and Omega-3 trial (VITAL). *Pain*. 2024 Mar 1;165(3):635-643. <https://doi.org/10.1097/j.pain.0000000000003044>. Epub 2023 Oct 25. PMID: 37878483
 - Sun X, Leder BZ, Bolster MB, et al. A Fracture Liaison Service to Address Vitamin D Deficiency for Patients Hospitalized for Osteoporotic Fracture. *J Endocr Soc*. 2024 Mar 12;8(5):bvae050. <https://doi.org/10.1210/jendso/bvae050>. eCollection 2024 Mar 12. PMID: 38550278
 - Takahashi K, Ikeda K, Hara-Isono K, et al. Discordant responses of bone formation and absorption markers in Japanese infants with vitamin D deficiency: a comprehensive matched case-control study. *JBMR Plus*. 2024 Mar 18;8(5):ziae033. <https://doi.org/10.1093/jbmrpl/ziae033>. eCollection 2024 May. PMID: 38623484
 - Thaveepunsan S, Kosasaeng E, Fusakul Y, et al. Correlation Between Rotator Cuff Tear in Thai Urban Elderly Population and Vitamin D Deficiency. *Cureus*. 2024 Feb 26;16(2):e54986. <https://doi.org/10.7759/cureus.54986>. eCollection 2024 Feb. PMID: 38550502
 - Tian E, Rothermel C, Michel Z, et al. Loss of the glycosyltransferase Galn11 affects vitamin D homeostasis and

- bone composition. *J Biol Chem.* 2024 Mar 12;300(4):107164. <https://doi.org/10.1016/j.jbc.2024.107164>. Online ahead of print. PMID: 38484798
- V N, Nair GG, Jose BC, et al. Study on Vitamin D Levels in 30 to 40-Year-Old Females With Low Back Pain. *Cureus.* 2024 Feb 15;16(2):e54238. <https://doi.org/10.7759/cureus.54238>. eCollection 2024 Feb. PMID: 38496123
 - Vivek K, Kamal R, Perera E, et al. Vitamin D Deficiency Leads to Poorer Health Outcomes and Greater Length of Stay After Total Knee Arthroplasty and Supplementation Improves Outcomes: A Systematic Review and Meta-Analysis. *JBJS Rev.* 2024 Apr 4;12(4):e23.00150. <https://doi.org/10.2106/JBJS.RVW.23.00150>. eCollection 2024 Apr 1. PMID: 38574186
 - Widajanti N, Hadi U, Soelistijo SA, et al. The Effect of Vitamin D Supplementation to Parameter of Sarcopenia in Elderly People: a Systematic Review and Meta-Analysis. *Can Geriatr J.* 2024 Mar 1;27(1):63-75. <https://doi.org/10.5770/cgj.27.694>. eCollection 2024 Mar. PMID: 38433884
 - Xiong A, Li H, Lin M, et al. Effects of active vitamin D analogues on muscle strength and falls in elderly people: an updated meta-analysis. *Front Endocrinol (Lausanne).* 2024 Feb 1;15:1327623. <https://doi.org/10.3389/fendo.2024.1327623>. eCollection 2024. PMID: 38362274
 - Xiong A, Zhou S, Liu C, et al. Vitamin D levels in idiopathic inflammatory myopathy patients: a meta-analysis. *Postgrad Med.* 2024 Feb 29. <https://doi.org/10.1080/00325481.2024.2325335>. Online ahead of print. PMID: 38420733
 - Yeganeh MH, Sinaei R, Rouhi M, et al. Investigating the comparative effect of vitamin D level with the type of complications in Henoch Schonlein purpura and Kawasaki disease. *Reumatol Clin (Engl Ed).* 2024 Apr;20(4):199-203. <https://doi.org/10.1016/j.reumae.2024.04.004>. PMID: 38644031
 - Zhao SS, Burgess S. Vitamin D is associated with reduced risk of Sjogren's syndrome: a Mendelian randomization study. *Rheumatology (Oxford).* 2024 Feb 1;63(2):e32-e33. <https://doi.org/10.1093/rheumatology/kead356>. PMID: 37449898