**Clinical Librarian Service Search Results**

**Request:** What literature or evidence is available concerning COVID-19 and Vitamin D? Does it help in prevention/cure?

**Summary**

A search of good quality resources has retrieved a small body of literature addressing vitamin D in COVID-19.

It appears that vitamin D is a topic of investigation in relation to potential prevention of COVID-19 infection, reduction of hospitalisations and therapeutic response in COVID-19 patients. However, there is little robust evidence at present.

A range of clinical trials are currently being registered and entering recruitment phases. A small sample selection of these from the *Clinicaltrials.gov* website can be found in the PDF document accompanying these results.

The results listed below provide a selection of papers, letters, editorials and public health advice concerning this topic. At present these results do not focus on any associations with ethnicity and/or irradiance. Should additional literature concerning these aspects be of interest, this can easily be supplied.

It is worth noting that a [preprint article](https://www.medrxiv.org/content/10.1101/2020.04.08.20058578v2) published on the pre-print server *MedRxiv*, has already been withdrawn, due to author concerns over *“idiosyncrasies in the reporting of 25(OH)D data across different countries”.* In view of this paper withdrawal, any data comparisons found within the below listed literature may need to be treated with a measure of caution.

I hope that I have interpreted your request correctly. Please let me know if you would like me to search further.

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**Accessing Articles**

Links are provided where online access to the full-text is available. An OpenAthens username and password may be required for online access to articles. You can register for one here: <https://openathens.nice.org.uk/>

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**Feedback**

Once you have read this report, I would appreciate it if you would complete our online literature search feedback form at:

<https://www.smartsurvey.co.uk/s/LiteratureSearchFeedback20202021/>

This relates to this specific search and will help us to monitor and improve our service.

Many Thanks.

Lisa Lawrence

Clinical Librarian

Lisa.Lawrence4@nhs.net

ext. 88155

**Current at:** 27th April 2020.

**Time taken for search:** 3.5 hours.

**Please acknowledge this work in any resulting paper or presentation as:**

Evidence Search: LS25 COVID-19 and Vitamin D. Lisa Lawrence. (27/04/2020). Derby, UK: University Hospitals of Derby & Burton NHS Foundation Trust Library and Knowledge Service.

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**Results: Papers, Letters & Editorials.**

1. **Early nutritional supplementation in non-critically ill patients hospitalized for the 2019 novel coronavirus disease (COVID-19): Rationale and feasibility of a shared pragmatic protocol**

**Author(s):** Caccialanza R.; Lobascio F.; Montagna E.; Cereda E.; Laviano A.; Bruno R.; Ludovisi S.; Corsico A.G.; Di Sabatino A.; Belliato M.; Calvi M.; Iacona I.; Grugnetti G.; Bonadeo E.; Muzzi A.

**Source:** Nutrition; 2020 Available online 3 April 2020, 110835. In press, Corrected Proof.

**Publication Type(s):** Article

**PubMedID:** 32280058

Available at [Nutrition (Burbank, Los Angeles County, Calif.)](https://auth.elsevier.com/ShibAuth/institutionLogin?entityID=https://idp.eng.nhs.uk/openathens&appReturnURL=https%3A%2F%2Fwww.clinicalkey.com%2Fcontent%2FplayBy%2Fdoi%2F%3Fv%3D10.1016%2Fj.nut.2020.110835) - from ClinicalKey

Available at [Nutrition (Burbank, Los Angeles County, Calif.)](https://doi.org/10.1016/j.nut.2020.110835) - from Unpaywall

**Abstract:** Objectives: Beginning in December 2019, the 2019 novel coronavirus disease (COVID-19) has caused a pneumonia epidemic that began in Wuhan, China, and is rapidly spreading throughout the whole world. Italy is the hardest hit country after China. Considering the deleterious consequences of malnutrition, which certainly can affect patients with COVID-19, the aim of this article is to present a pragmatic protocol for early nutritional supplementation of non-critically ill patients hospitalized for COVID-19 disease. It is based on the observation that most patients present at admission with severe inflammation and anorexia leading to a drastic reduction of food intake, and that a substantial percentage develops respiratory failure requiring non-invasive ventilation or even continuous positive airway pressure. Method(s): High-calorie dense diets in a variety of different consistencies with highly digestible foods and snacks are available for all patients. Oral supplementation of whey proteins as well as intravenous infusion of multivitamin, multimineral trace elements solutions are implemented at admission. In the presence of 25-hydroxyvitamin D deficit, cholecalciferol is promptly supplied. If nutritional risk is detected, two to three bottles of protein-calorie oral nutritional supplements (ONS) are provided. If <2 bottles/d of ONS are consumed for 2 consecutive days and/or respiratory conditions are worsening, supplemental/total parenteral nutrition is prescribed. Conclusion(s): We are aware that our straight approach may be debatable. However, to cope with the current emergency crisis, its aim is to promptly and pragmatically implement nutritional care in patients with COVID-19, which might be overlooked despite being potentially beneficial to clinical outcomes and effective in preventing the consequences of malnutrition in this patient population. Copyright © 2020 Elsevier Inc.

**Database:** EMBASE

1. **COVID-19 and vitamin D-Is there a link and an opportunity for intervention?**

**Author(s):** Jakovac, Hrvoje

**Source:** American journal of physiology. Endocrinology and metabolism; May 2020; vol. 318 (no. 5); p. E589

**Publication Type(s):** Letter

**PubMedID:** 32297519

Available at [American journal of physiology. Endocrinology and metabolism](https://journals.physiology.org/doi/pdf/10.1152/ajpendo.00138.2020) - from Unpaywall

**Database:** Medline

1. **A Comprehensive Literature Review on the Clinical Presentation, and Management of the Pandemic Coronavirus Disease 2019 (COVID-19).**

**Author(s):** Kakodkar, Pramath; Kaka, Nagham; Baig, M N

**Source:** Cureus; Apr 2020; vol. 12 (no. 4); p. e7560

**Publication Type(s):** Journal Article Review

**PubMedID:** 32269893

Available at [Cureus](http://europepmc.org/search?query=(DOI:10.7759/cureus.7560)) - from Europe PubMed Central - Open Access

Available at [Cureus](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=2168-8184&volume=12&issue=4&spage=e7560) - from ProQuest (Health Research Premium) - NHS Version

Available at [Cureus](https://assets.cureus.com/uploads/review_article/pdf/29670/1586966460-20200415-26867-1l15ftz.pdf) - from Unpaywall

**Extract:** *“Vitamin D*

*Vitamin D is known to mitigate the scope of acquired immunity and regenerate endothelial lining. This may be beneficial in minimizing the alveolar damage caused in ARDS. Level I evidence (N = 11,321) showed that there is a 12% overall protective effect of vitamin D supplementation against bacterial and viral acute respiratory tract infection (adjusted OD = 0.88, p < 0.001). These protective effects increased to 19% in those individuals on the daily or weekly regimen of vitamin D compared to those dosing on a monthly bolus of vitamin D (adjusted OD = 0.81, p < 0.001). Furthermore, there is a 70% protective effect when vitamin D deficiency is corrected with supplementation (adjusted OD = 0.30, p = 0.006). This result is pertinent to the majority of individuals residing in the northern latitudes that experience vitamin D deficiency (serum 25-hydroxyVitamin D <25 nmol/L) due to extended periods of lack of sunlight”.*

**Database:** Medline

1. **Considerations for obesity, vitamin D, and physical activity amidst the COVID-19 pandemic.**

**Author(s):** Carter, Stephen J; Baranauskas, Marissa N; Fly, Alyce D

**Source:** Obesity (Silver Spring, Md.); Apr 2020

**Publication Type(s):** Journal Article

**PubMedID:** 32299148

Available at [Obesity (Silver Spring, Md.)](https://onlinelibrary.wiley.com/doi/full/10.1002/oby.22838) - from Wiley Online Library

**Abstract:** As the biomedical community races to disentangle the unknowns associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) - the virus responsible for causing coronavirus disease (COVID-19) - the link between diminished immune function and individuals with obesity raises important questions about the possibility for greater viral pathogenicity in this population. Increased adiposity may undermine the pulmonary microenvironment wherein viral pathogenesis and immune cell trafficking could contribute to a maladaptive cycle of local inflammation and secondary injury. A further challenge to those with obesity during the current pandemic may involve vitamin D deficiency/insufficiency. In the interest of personal and public health, we caution decision/policy makers alike not to pin all hope on a proverbial 'silver bullet.' Until further breakthroughs emerge, we should remember that modifiable lifestyle factors like diet and physical activity should not be marginalized. Decades of empirical evidence supports both as key factors promoting health and wellness.

**Database:** Medline

1. **Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths.**

**Author(s):** Grant, William B; Lahore, Henry; McDonnell, Sharon L; Baggerly, Carole A; French, Christine B; Aliano, Jennifer L; Bhattoa, Harjit P

**Source:** Nutrients; Apr 2020; vol. 12 (no. 4)

**Publication Type(s):** Journal Article Review

**PubMedID:** 32252338

Available at [Nutrients](http://europepmc.org/search?query=(DOI:10.3390/nu12040988)) - from Europe PubMed Central - Open Access

Available at [Nutrients](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=2072-6643&volume=12&issue=4&spage=988) - from ProQuest (Health Research Premium) - NHS Version

Available at [Nutrients](https://www.mdpi.com/2072-6643/12/4/988/pdf) - from Unpaywall

**Abstract:** The world is in the grip of the COVID-19 pandemic. Public health measures that can reduce the risk of infection and death in addition to quarantines are desperately needed. This article reviews the roles of vitamin D in reducing the risk of respiratory tract infections, knowledge about the epidemiology of influenza and COVID-19, and how vitamin D supplementation might be a useful measure to reduce risk. Through several mechanisms, vitamin D can reduce risk of infections. Those mechanisms include inducing cathelicidins and defensins that can lower viral replication rates and reducing concentrations of pro-inflammatory cytokines that produce the inflammation that injures the lining of the lungs, leading to pneumonia, as well as increasing concentrations of anti-inflammatory cytokines. Several observational studies and clinical trials reported that vitamin D supplementation reduced the risk of influenza, whereas others did not. Evidence supporting the role of vitamin D in reducing risk of COVID-19 includes that the outbreak occurred in winter, a time when 25-hydroxyvitamin D (25(OH)D) concentrations are lowest; that the number of cases in the Southern Hemisphere near the end of summer are low; that vitamin D deficiency has been found to contribute to acute respiratory distress syndrome; and that case-fatality rates increase with age and with chronic disease comorbidity, both of which are associated with lower 25(OH)D concentration. To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D3 for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d. The goal should be to raise 25(OH)D concentrations above 40-60 ng/mL (100-150 nmol/L). For treatment of people who become infected with COVID-19, higher vitamin D3 doses might be useful. Randomized controlled trials and large population studies should be conducted to evaluate these recommendations.

**Database:** Medline

1. **Vitamin D Supplementation Could Possibly Improve Clinical Outcomes of Patients Infected with Coronavirus-2019 (COVID-2019).**

**Citation:** Alipio, Mark. April 9, 2020.

Available at:

SSRN: <https://ssrn.com/abstract=3571484> or [http://dx.doi.org/10.2139/ssrn.3571484](https://dx.doi.org/10.2139/ssrn.3571484)

**Abstract:** The rapid spread of COVID-2019 in many areas of the world calls for preventive health measures. Although basic guidelines on infection control are recommended, treatment has remained the best choice to avert mortality. However, for the time being, there are no known vaccines for the disease. In this paper, I used multinomial logistic regression to predict clinical outcomes of patients infected with COVID-2019 based on 25-hydroxyvitamin D [25(OH)D] levels, the barometer for Vitamin D status. Using the database of three hospitals in Southern Asian countries, I conducted a retrospective multicentre study of 212 cases with laboratory-confirmed infection of SARS-CoV-2. Data pertaining to clinical features and serum 25(OH)D levels were extracted from the medical records. For statistical analysis, I used Mann-Whitney U and χ² tests to compare differences in the clinical outcomes. Multinomial logistic regression was used to explore the association between serum 25(OH)D level and clinical outcomes of the cases. Frequency and percentage were used for categorical variables. Mean was used for continuous variables. A p-value below 0.01 was considered statistically significant. Of the 212 cases of COVID-2019, majority had ordinary clinical outcome. Mean serum 25(OH)D level was 23.8 ng/ml. Serum 25(OH)D level was lowest in critical cases, but highest in mild cases. Serum 25(OH)D levels were statistically significant among clinical outcomes. Majority had insufficient Vitamin D status, most of them were not severe. Vitamin D status is significantly associated with clinical outcomes. A multinomial logistic regression analysis reported that for each standard deviation increase in serum 25(OH)D, the odds of having a mild clinical outcome rather than a severe outcome were approximately 7.94 times (OR=0.126, p<0.001) while interestingly, the odds of having a mild clinical outcome rather than a critical outcome were approximately 19.61 times (OR=0.051, p<0.001). The results suggest that an increase in serum 25(OH)D level in the body could either improve clinical outcomes or mitigate worst (severe to critical) outcomes, while a decrease in serum 25(OH)D level in the body could worsen clinical outcomes of COVID-2019 patients. In conclusion, this study provides substantial information to clinicians and health policy-makers. Vitamin D supplementation could possibly improve clinical outcomes of patients infected with COVID-2019. Further research should conduct randomized controlled trials and large population studies to evaluate this recommendation. **Note:** Funding: None. No funding to declare. Conflict of Interest: The author declares no conflict of interest. Ethical Approval: Ethics approval was considered exempt owing to the nature of the study and open-access data used.

**Source:** Google Scholar.

1. **Editorial: low population mortality from COVID-19 in countries south of latitude 35 degrees North - supports vitamin D as a factor determining severity.**

**Author(s):** Rhodes, Jonathan M; Subramanian, Sreedhar; Laird, Eamon; Anne Kenny, Rose

**Source:** Alimentary pharmacology & therapeutics; Apr 2020

**Publication Type(s):** Editorial

**PubMedID:** 32311755

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/full/10.1111/apt.15777) - from Wiley Online Library

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/apt.15777) - from Unpaywall

**Abstract:** The excellent review by Al-Ani et al reflects a consensus approach to management of inflammatory bowel disease during the SARS-CoV-2 pandemic that has been established remarkably rapidly by very effective international collaboration. Much of the focus has appropriately been on the potential impact of immuno-modulating therapies. We would also like to highlight the potential importance of nutrition and particularly vitamin D as raised by Panarese and Shahini.

**Database:** Medline

1. **[Vitamin D and coronavirus: a new field of use?]**

**Author(s):** Maestri, Emilio; Formoso, Giulio; Da Cas, Roberto; Mammarella, Federica; Guerrizio, Maria Alessandra; Trotta, Francesco

**Source:** Recenti progressi in medicina; Apr 2020; vol. 111 (no. 4); p. 253-256

**Publication Type(s):** English Abstract Journal Article

**PubMedID:** 32319447

**Abstract:** Given the succession of communications in scientific and popular circuits, tending to take for granted a role for vitamin D in the control of the coronavirus pandemic, the authors conducted an analysis of the literature currently available in order to recognize what is supported by opinions personal and what evidence of effectiveness. At the end of the bibliographic survey there is the current absence of evidence of efficacy in favor of vitamin D in the treatment of coronavirus infection in its various expressions. The diffusion of personal opinions as if they were evidence can be a disturbing factor for adequate assistance and for correct research.

**Database:** Medline

1. **Rheumatologists' perspective on coronavirus disease 19 (COVID-19) and potential therapeutic targets**

**Author(s):** Misra D.P.; Agarwal V.; Gasparyan A.Y.; Zimba O.

**Source:** Clinical rheumatology; Apr 2020

**Publication Type(s):** Review

**PubMedID:** 32277367

Available at [Clinical rheumatology](https://link.springer.com/content/pdf/10.1007/s10067-020-05073-9.pdf) - from Unpaywall

**Abstract:**The ongoing pandemic coronavirus disease 19 (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a matter of global concern. Environmental factors such as air pollution and smoking and comorbid conditions (hypertension, diabetes mellitus and underlying cardio-respiratory illness) likely increase the severity of COVID-19. Rheumatic manifestations such as arthralgias and arthritis may be prevalent in about a seventh of individuals. COVID-19 can result in acute interstitial pneumonia, myocarditis, leucopenia (with lymphopenia) and thrombocytopenia, also seen in rheumatic diseases like lupus and Sjogren's syndrome. Severe disease in a subset of patients may be driven by cytokine storm, possibly due to secondary hemophagocytic lymphohistiocytosis (HLH), akin to that in systemic onset juvenile idiopathic arthritis or adult-onset Still's disease. In the absence of high-quality evidence in this emerging disease, understanding of pathogenesis may help postulate potential therapies. Angiotensin converting enzyme 2 (ACE2) appears important for viral entry into pneumocytes; dysbalance in ACE2 as caused by ACE inhibitors or ibuprofen may predispose to severe disease. Preliminary evidence suggests potential benefit with chloroquine or hydroxychloroquine. Antiviral drugs like lopinavir/ritonavir, favipiravir and remdesivir are also being explored. Cytokine storm and secondary HLH might require heightened immunosuppressive regimens. Current international society recommendations suggest that patients with rheumatic diseases on immunosuppressive therapy should not stop glucocorticoids during COVID-19 infection, although minimum possible doses may be used. Disease-modifying drugs should be continued; cessation may be considered during infection episodes as per standard practices. Development of a vaccine may be the only effective long-term protection against this disease.Key Points\* Patients with coronavirus disease 19 (COVID-19) may have features mimicking rheumatic diseases, such as arthralgias, acute interstitial pneumonia, myocarditis, leucopenia, lymphopenia, thrombocytopenia and cytokine storm with features akin to secondary hemophagocytic lymphohistiocytosis.\* Although preliminary results may be encouraging, high-quality clinical trials are needed to better understand the role of drugs commonly used in rheumatology like hydroxychloroquine and tocilizumab in COVID-19.\* Until further evidence emerges, it may be cautiously recommended to continue glucocorticoids and other disease-modifying antirheumatic drugs (DMARDs) in patients receiving these therapies, with discontinuation of DMARDs during infections as per standard practice.

**Database:** EMBASE

1. **Letter: Covid-19, and vitamin D.**

**Author(s):** Panarese, Alba; Shahini, Endrit

**Source:** Alimentary pharmacology & therapeutics; Apr 2020

**Publication Type(s):** Letter

**PubMedID:** 32281109

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/full/10.1111/apt.15752) - from Wiley Online Library

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/apt.15752) - from Unpaywall

**Database:** Medline

1. **Letter: Covid-19 and vitamin D-authors' reply.**

**Author(s):** Tian, Yuan; Rong, Long

**Source:** Alimentary pharmacology & therapeutics; Apr 2020

**Publication Type(s):** Letter

**PubMedID:** 32286694

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/full/10.1111/apt.15764) - from Wiley Online Library

Available at [Alimentary pharmacology & therapeutics](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/apt.15764) - from Unpaywall

**Abstract:** We read with great interest the letter from Drs Panarese and Shahini, regarding our review article. We are glad that our review has helped Italian colleagues in this pandemic and grateful for their comments. Interestingly, they found that northerly latitude is associated with increased mortality rate and hospitalization rate for COVID-19 worldwide.

**Database:** Medline

1. **Vitamin D, Covid-19 and Children.**

**Author(s):** Molloy, E J; Murphy, N

**Source:** Irish medical journal; Apr 2020; vol. 113 (no. 4); p. 59

**Publication Type(s):** Journal Article

Available at: <http://imj.ie/vitamin-d-covid-19-and-children/>

**PubMedID:** 32268052

**Database:** Medline

1. **Optimisation of Vitamin D Status for Enhanced Immuno-protection Against Covid-19.**

**Author(s):** McCartney, D M; Byrne, D G

**Source:** Irish medical journal; Apr 2020; vol. 113 (no. 4); p. 58

**Publication Type(s):** Journal Article

Available at: <http://imj.ie/optimisation-of-vitamin-d-status-for-enhanced-immuno-protection-against-covid-19/>

**PubMedID:** 32268051

**Database:** Medline

1. **Sex-Specific SARS-CoV-2 Mortality: Among Hormone-Modulated ACE2 Expression, Risk of Venous Thromboembolism and Hypovitaminosis D.**

**Author(s):** La Vignera S, Cannarella R, Condorelli RA, Torre F, Aversa A, Calogero AE.

**Citation:** Int J Mol Sci. 2020 Apr 22;21(8). pii: E2948. doi: 10.3390/ijms21082948.

**Abstract:** Severe acute respiratory syndrome coronavirus (SARS-CoV-2) disease (COVID-19) appears to have a higher mortality rate in presence of comorbidities and in men. The latter suggests the presence of a possible sex-dependent susceptibility. An enzymatic system involved in this different predisposition could be represented by angiotensin converting enzyme 2 (ACE2). ACE2 is activated and down-regulated by the spike protein of the virus and allows the penetration of SARS-CoV-2 into epithelial cells and myocardium. Data on the experimental animal have shown that 17ß-estradiol increases the expression and activity of ACE2 in both adipose tissue and kidney. Spontaneously hypertensive male mice have a higher myocardial ACE2 expression than females and its levels decrease after orchiectomy. In addition to this first aspect, the recent evidence of an increased frequency of venous thromboembolism in patients with COVID-19 (a clinical element associated with a worse prognosis) calls the attention on the safety of treatment with testosterone, in particular in hypogonadal men with greater genetic predisposition. Evidence that sex hormones are able to modulate the expression of ACE2 could help in interpreting epidemiological results and in designing more appropriate intervention strategies. Moreover, the vitamin D deficiency in elderly men may be worthy of further study regarding the epidemiological aspects of this different susceptibility and lethality between sexes. DOI: 10.3390/ijms21082948

**Source:** PubMed. PMID: 32331343

1. **Key Vitamin D Target Genes with Functions in the Immune System.**

**Author(s):** Koivisto O, Hanel A, Carlbery C.

**Citation:** Nutrients, 12(4) 2020 Apr 19.

Available at: <https://www.mdpi.com/2072-6643/12/4/1140>

**Abstract:** The biologically active form of vitamin D3, 1α,25-dihydroxyvitamin D3 (1,25(OH)2D3), modulates innate and adaptive immunity via genes regulated by the transcription factor vitamin D receptor (VDR). In order to identify the key vitamin D target genes involved in these processes, transcriptome-wide datasets were compared, which were obtained from a human monocytic cell line (THP-1) and peripheral blood mononuclear cells (PBMCs) treated in vitro by 1,25(OH)2D3, filtered using different approaches, as well as from PBMCs of individuals supplemented with a vitamin D3 bolus. The led to the genes ACVRL1, CAMP, CD14, CD93, CEBPB, FN1, MAPK13, NINJ1, LILRB4, LRRC25, SEMA6B, SRGN, THBD, THEMIS2 and TREM1. Public epigenome- and transcriptome-wide data from THP-1 cells were used to characterize these genes based on the level of their VDR-driven enhancers as well as the level of the dynamics of their mRNA production. Both types of datasets allowed the categorization of the vitamin D target genes into three groups according to their role in (i) acute response to infection, (ii) infection in general and (iii) autoimmunity. In conclusion, 15 genes were identified as major mediators of the action of vitamin D in innate and adaptive immunity and their individual functions are explained based on different gene regulatory scenarios.

**Source:** WHO COVID-19 Global Literature on coronavirus disease.

1. **Potential interventions for novel coronavirus in China: A systematic review.**

**Author(s):** Zhang L, Liu Y.

**Citation:** *J Med Virol*. 2020; 92: 479– 490. Doi: 10.1002/jmv.25707.

Available at: <https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.25707>

**Extract:** *“2.1.4 Vitamin D*

*Vitamin D is not only a nutrient but also a hormone, which can be synthesized in our body with the help of sunlight. In addition to its role in maintaining bone integrity, it also stimulates the maturation of many cells including immune cells. A high number of healthy adults have been reported to be with low levels of vitamin D, mostly at the end of the Winter season. In addition, people who are housebound, or institutionalized and those who work at night may have vitamin D deficiency, as do many elderly people, who have limited exposure to sunlight. The COVID‐19 was first identified in Winter of 2019 and mostly affected middle‐aged to elderly people. The virus‐infected people might have insufficient vitamin D. In addition, the decreased vitamin D status in calves had been reported to cause the infection of bovine coronavirus. Therefore, vitamin D could work as another therapeutic option for the treatment of this novel virus.”.*

**Source:** WHO COVID-19 Global Literature on coronavirus disease.

1. **Beneficial role of vitamin D3 in the prevention of certain respiratory diseases**

**Author(s):** L'o'ng K.V.Q.; Nguyen L.T.H.

**Source:** Therapeutic Advances in Respiratory Disease; Dec 2013; vol. 7 (no. 6); p. 327-350

**Publication Type(s):** Review

**PubMedID:** 24056290

Available at [Therapeutic advances in respiratory disease](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=1753-4658&volume=7&issue=6&spage=327) - from ProQuest (Health Research Premium) - NHS Version

**Abstract:** There is evidence of aberrations in the vitamin D-endocrine system in subjects with respiratory diseases. Vitamin D deficiency is highly prevalent in patients with respiratory diseases, and patients who receive vitamin D have significantly larger improvements in inspiratory muscle strength and maximal oxygen uptake. Studies have provided an opportunity to determine which proteins link vitamin D to respiratory pathology, including the major histocompatibility complex class II molecules, vitamin D receptor, vitamin D-binding protein, chromosome P450, Toll-like receptors, poly(ADP-ribose) polymerase-1, and the reduced form of nicotinamide adenine dinucleotide phosphate. Vitamin D also exerts its effect on respiratory diseases through cell signaling mechanisms, including matrix metalloproteinases, mitogen-activated protein kinase pathways, the Wnt/beta-catenin signaling pathway, prostaglandins, reactive oxygen species, and nitric oxide synthase. In conclusion, vitamin D plays a significant role in respiratory diseases. The best form of vitamin D for use in the treatment of respiratory diseases is calcitriol because it is the active metabolite of vitamin D3 and modulates inflammatory cytokine expression. Further investigation of calcitriol in respiratory diseases is needed. © The Author(s), 2013.

**Database:** EMBASE

**Results: Advice to the general public.**

1. **Vitamin D – Vitamins and Minerals. Includes coronavirus update.**

**Date:** April 2020.

**Source:** NHS.uk – Public Health England.

**Full Text/URL:** <https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/>

1. **COVID-19/Coronavirus – Advice for the general public – Should I take a vitamin D supplement.**

**Date:** April 2020.

**Source:** British Dietetic Association.

**Full Text/URL:** <https://www.bda.uk.com/resource/covid-19-corona-virus-advice-for-the-general-public.html>

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**Databases searched:**

* + **Evidence-Based Reviews/Point-of-Care:** Cochrane Library, UpToDate, DynaMed.
  + **Guidance:** NICE Guidance, selected International Guidelines.
  + **Healthcare Databases:** MEDLINE, EMBASE, EMCARE, CINAHL, PubMed, NICE Evidence.
  + **Other:** Google, Google Scholar, World Health Organization Database of publications on coronavirus disease (COVID-19), LitCOVID, MedRxiv.

**Local Guidance:** Local guidance has not been searched as part of this literature search. However, local guidelines, policies and procedures are available via the red button on the intranet.

**Search Terms:**

|  |  |
| --- | --- |
| ***Subject Headings*** | ***Free Text Words*** |
| Coronavirus Infections | 2019-nCoV |
| Vitamin D | COVID-19 |
| Vitamin D Deficiency | Coronavirus |
|  | “Corona virus” |
|  | MERS-CoV |
|  | “Middle east respiratory syndrome” |
|  | nCoV |
|  | “Novel coronavirus” |
|  | “Novel CoV” |
|  | SARS-CoV |
|  | SARS-CoV-2 |
|  | Sarscov2 |
|  | “Severe acute respiratory syndrome” |
|  | VitaminD |
|  | “Vitamin D” |
|  | VitD |

**Search Limits:** None applied.

**Search History:**

**Search Example:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Database** | **Search term** | **Results** |
| 1 | Medline | (COVID-19 OR coronavirus OR "Corona virus" OR 2019-nCoV OR SARS-CoV OR MERS-CoV OR "Severe Acute Respiratory Syndrome" OR "Middle East Respiratory Syndrome" OR "novel CoV" OR "novel coronavirus" OR SARS-CoV-2 OR sarscov2 OR 2019nCoV ORnCOV).ti,ab | 19098 |
| 2 | Medline | exp "CORONAVIRUS INFECTIONS"/ | 10775 |
| 3 | Medline | ("Vitamin D" OR VitD OR VitaminD).ti,ab | 60420 |
| 4 | Medline | exp "VITAMIN D"/ OR exp "VITAMIN D DEFICIENCY"/ | 69948 |
| 5 | Medline | (1 OR 2) | 22872 |
| 6 | Medline | (3 OR 4) | 91398 |
| 7 | Medline | (5 AND 6) | 12 |
| 8 | EMBASE | (COVID-19 OR coronavirus OR "Corona virus" OR 2019-nCoV OR SARS-CoV OR MERS-CoV OR "Severe Acute Respiratory Syndrome" OR "Middle East Respiratory Syndrome" OR "novel CoV" OR "novel coronavirus" OR SARS-CoV-2 OR sarscov2 OR 2019nCoV ORnCOV).ti,ab | 19991 |
| 9 | EMBASE | exp "CORONAVIRUS INFECTION"/ | 12352 |
| 10 | EMBASE | ("Vitamin D" OR VitD OR VitaminD).ti,ab | 89820 |
| 11 | EMBASE | exp "VITAMIN D"/ OR exp "VITAMIN D DEFICIENCY"/ | 143950 |
| 12 | EMBASE | (8 OR 9) | 25354 |
| 13 | EMBASE | (10 OR 11) | 155546 |
| 14 | EMBASE | (12 AND 13) | 28 |
| 15 | EMCARE | (COVID-19 OR coronavirus OR "Corona virus" OR 2019-nCoV OR SARS-CoV OR MERS-CoV OR "Severe Acute Respiratory Syndrome" OR "Middle East Respiratory Syndrome" OR "novel CoV" OR "novel coronavirus" OR SARS-CoV-2 OR sarscov2 OR 2019nCoV ORnCOV).ti,ab | 2942 |
| 16 | EMCARE | exp "CORONAVIRUS INFECTION"/ | 3776 |
| 17 | EMCARE | ("Vitamin D" OR VitD OR VitaminD).ti,ab | 17312 |
| 18 | EMCARE | exp "VITAMIN D"/ OR exp "VITAMIN D DEFICIENCY"/ | 30859 |
| 19 | EMCARE | (15 OR 16) | 4789 |
| 20 | EMCARE | (17 OR 18) | 32071 |
| 21 | EMCARE | (19 AND 20) | 5 |
| 22 | CINAHL | (COVID-19 OR coronavirus OR "Corona virus" OR 2019-nCoV OR SARS-CoV OR MERS-CoV OR "Severe Acute Respiratory Syndrome" OR "Middle East Respiratory Syndrome" OR "novel CoV" OR "novel coronavirus" OR SARS-CoV-2 OR sarscov2 OR 2019nCoV ORnCOV).ti,ab | 3386 |
| 23 | CINAHL | exp "CORONAVIRUS INFECTIONS"/ | 3234 |
| 24 | CINAHL | ("Vitamin D" OR VitD OR VitaminD).ti,ab | 19604 |
| 25 | CINAHL | exp "VITAMIN D DEFICIENCY"/ | 8782 |
| 26 | CINAHL | exp "VITAMIN D"/ | 19549 |
| 27 | CINAHL | (22 OR 23) | 4837 |
| 28 | CINAHL | (24 OR 25 OR 26) | 27536 |
| 29 | CINAHL | (27 AND 28) | 3 |

**Search Date: 27/04/2020**

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