

Ausgewählte Veröffentlichungen zur Rolle von Vitamin D bei der Sterblichkeit von Covid-19 Patienten.

Selected publications on the role of Vitamin D regarding the mortality of Covid-19 patients.

Veröffentlichung 1 - 5 :	Klinische Studien und Erkenntnisse
Veröffentlichung 6 - 10	Wissenschaftliche Beweise
Veröffentlichung 11-13	Infos zum Vitamin D-Level der deutschen Bevölkerung
Veröffentlichung 14	Freiwillige Vitamin D-Supplementierung in Schweden

Publication 1 - 5 :	Clinical studies and findings
Publication 5 - 10	Scientific evidence
Publication 11-13	Info on the Vitamin D-Level of the German population
Publication 14	Voluntary Vitamin D –supplementation in Sweden

1. Raharusun P, et al. **Pattern of Covid-19 Mortality and Vitamin D: An Indonesian study.** 30. April 2020, SSRN. Preprint

Auszug aus dem Abstract / Excerpt from the abstract:

The aim was to determine patterns of mortality and associated factors, with a special focus on Vitamin D status.

When controlling for age, sex, and comorbidity, Vitamin D status is strongly associated with COVID-19 mortality outcome of cases.

Link zur Veröffentlichung / Link to the publication:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3585561

Statistische Datenauswertung / Statistical data evaluation Borsche L.:

https://borsche.de/res/Indo_1.pdf

2. Alipio M. **Vitamin D supplementation could possibly improve clinical outcomes of patients infected with coronavirus-2019 (COVID-19).** Apr 9, 2020, SSRN. Preprint

Auszug aus dem Abstract / Excerpt from the abstract:

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, $p<0.001$).

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-19.

Link zur Veröffentlichung / Link to the publication:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3571484

3. Ilie PC, et al. **The role of Vitamin D in the prevention of coronavirus disease 2019-infection and mortality.** Research Square. doi: 10.21203/rs.3.rs-21211/v1

Auszug aus dem Abstract / Excerpt from the abstract:

We have identified the mean levels of vitamin D for 20 European Countries for which we have also got the data regarding the morbidity and mortality caused by COVID-19.

The mean level of vitamin D (average 56nmol/L, STDEV 10.61) in each country was strongly associated with the number of cases/1M (mean 295.95, STDEV 298.73 $p=0.004$, respectively with the mortality/1M (mean 5.96, STDEV 15.13, $p < 0.00001$).

Vitamin D levels are severely low in the aging population especially in Spain, Italy and Switzerland. This is also the most vulnerable group of population for COVID-19.

We believe, that we can advise Vitamin D supplementation to protect against SARS-CoV2 infection.

Link zur Veröffentlichung / Link to the publication:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7202265/pdf/40520_2020_Article_1570.pdf

4. Han J E, et al. **High dose Vitamin D administration in ventilated intensive care unit patients: A pilot double blind randomized controlled trial.** J Clin Transl Endocrinol. 2016 Jun; 4:59-65. doi: 10.1016/j.jcte.2016.04.004. Epub 2016 May 5.

Auszug aus dem Abstract / Excerpt from the abstract:

There is a high prevalence of vitamin D deficiency in the critically ill patient population. Several intensive care unit studies have demonstrated an association between vitamin D deficiency [25-hydroxyvitamin D (25(OH)D) < 20 ng/mL] and increased hospital length of stay (LOS), readmission rate, sepsis and mortality.

In this pilot study, high-dose vitamin D3 safely increased plasma 25(OH)D concentrations into the sufficient range and was associated with decreased hospital length of stay without altering other clinical outcomes.

Link zur Veröffentlichung / Link to the publication:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4939707/pdf/main.pdf>

5. Schwalfenberg G. **Vitamin D for influenza.** Can Fam Physician 2015 Jun; 10 (11); 61 (6): 507. Comment on antiviral medication for influenza. Korownyk C, et al. Can Fam Physician 2015 Apr; 61 (4): 351. PMID: 26071153 PMCID: PMC4463890

Auszug aus dem Abstract / Excerpt from the abstract:

In those patients who do have influenza, we have treated them with the *vitamin D hammer*, as coined by my colleague. This is a 1-time 50 000 IU dose of vitamin D3 or 10 000 IU 3 times daily for 2 to 3 days. The results are dramatic, with complete resolution of symptoms in 48 to 72 hours. One-time doses of vitamin D at this level have been used safely and have never been shown to be toxic.

Link zur Veröffentlichung / Link to the publication:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4463890/pdf/0610507.pdf>

6. Dancer RCA., et al. **Vitamin D deficiency contributes directly to the acute respiratory distress syndrome (ARDS)**. Thorax 2015; 70 (7): 617-624. doi: 10.1136/thoraxjnl-2014-206680. Epub 2015 Apr 22.

Auszug aus dem Abstract / Excerpt from the abstract:

Vitamin D deficiency is common in people who develop ARDS. This deficiency of vitamin D appears to contribute to the development of the condition, and approaches to correct vitamin D deficiency in patients at risk of ARDS should be developed.

Link zur Veröffentlichung / Link to the publication:

<https://thorax.bmj.com/content/thoraxjnl/70/7/617.full.pdf>

7. Xu J, et al. **Vitamin D alleviates lipopolysaccharide-induced acute lung injury via regulation of the renin-angiotensin system**. Mol Med Rep 2017 Nov., 16(5): 7432-7438

Auszug aus dem Abstract / Excerpt from the abstract:

Acute lung injury (ALI) and acute respiratory distress syndrome (ARDS) are the clinical manifestations of severe lung damage and respiratory failure. ALI and ARDS result are associated with high mortality in patients. At present, no effective treatments for ALI and ARDS exist. It is established that vitamin D exhibits anti-inflammatory effects, however, the specific effect of vitamin D on ALI remains largely unknown. The aim of the present study was to investigate whether, and by which mechanism, vitamin D alleviates lipopolysaccharide (LPS)-induced ALI.

Link zur Veröffentlichung / Link to the publication:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5865875/pdf/mmr-16-05-7432.pdf>

8. Bergman P, et al. **Vitamin D supplementation to patients with frequent respiratory tract infections: a post hoc analysis of a randomized and placebo-controlled trial**. BMC Research Notes 2015; 8: 391. Published online 2015 Aug 30. doi: 10.1186/s13104-015-1378-3

Auszug aus dem Abstract / Excerpt from the abstract:

Vitamin D supplementation was found to significantly increase the probability of staying infection free during the study period. This finding further supports the notion that vitamin D-status should be monitored in adult patients with frequent respiratory tract infections (RTIs) and suggests that selected patients with vitamin D deficiency are supplemented. This could be a safe and cheap way to reduce RTIs and improve health in this vulnerable patient population.

Link zur Veröffentlichung / Link to the publication:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4553208/pdf/13104_2015_Article_1378.pdf

9. Findlay EG, et al. **Cationic host defence peptides: potential as antiviral therapeutics.** *Biodrugs.* 2013; 27(5): 479-493. Published online 2013 May 7. doi: 10.1007/s40259-013-0039-0

Auszug aus dem Abstract / Excerpt from the abstract:

Cationic host defence peptides, such as defensins and cathelicidins, are important components of innate immunity with antimicrobial and immunomodulatory capabilities. In recent years they have also been shown to be natural, broad-spectrum antivirals against both enveloped and non-enveloped viruses.

Link zur Veröffentlichung / Link to the publication:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3775153/pdf/40259_2013_Article_39.pdf

10. Quraishi SA., et al. **Effect of cholecalciferol supplementation on vitamin D status and cathelicidin levels in sepsis: A randomized, placebo-controlled trial.** *Crit Care Med.* 2015; 43(9): 1928-1937. doi: 10.1097/CCM.0000000000001148

Auszug aus dem Abstract / Excerpt from the abstract:

In this randomized controlled trial of critically ill patients, we compared the effects of placebo versus 200,000 IU cholecalciferol versus 400,000 IU cholecalciferol on vitamin D status and expression of an endogenous, vitamin D-dependent, antimicrobial peptide. We demonstrated that a single bolus dose of 400,000 IU cholecalciferol is safe and effective for rapidly improving circulating 25OHD levels, bioavailable 25OHD, and expression of LL-37 in patients with severe sepsis or septic shock.

Link zur Veröffentlichung / Link to the publication:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4537665/pdf/nihms688734.pdf>

11. Rabenberg M., et al. **Vitamin-D-Status in Deutschland.** *Journal of Health Monitoring* 2016; 1(2): 36-42. doi: 10.17886/RKI-GBE-2016-036

Relevante Aussagen / Relevant statements:

Während im Sommer und Herbst 8,3 % bzw. 19,3 % der Erwachsenen einen mangelhaften Vitamin-D-Status aufweisen, sind es im Frühling und Winter 38,4 % bzw. 52,0 %.

Kommentar:

RKI: „mangelhaft“: <10 ng/ml, „unzureichend“: <20 ng/ml.

WHO: “deficiency” (Mangel): <20 ng/ml, “insufficient” (unzureichend): 20-30 ng/ml
Nachdem 30,2% der 18-79-Jährigen ganzjährig <10 ng/ml liegen, muss für diese Gruppe ein Wert unter oder um 6 ng/ml im Winterquartal (Dez-Feb) angenommen werden.

Link zur Veröffentlichung / Link to the publication:

https://www.rki.de/DE/Content/Gesundheitsmonitoring/Gesundheitsberichterstattung/GBEDownloadsJ/JoHM_2016_02_ernaehrung.pdf;jsessionid=58CFA5515AFD172F6DABA57706F967E5.internet082?_blob=publicationFile

12. Ehlers A. **Vitamin D - der aktuelle D-A-CH-Referenzwert aus Sicht der Risikobewertung.** Bundesinstitut für Risikobewertung, Berlin 2013; 26 Seiten

Relevante Aussagen / Relevant statements:

„Vitamin D Mangel ist in einigen Bevölkerungsgruppen häufig...“ Aus den in den Grafiken genannten Bundesgesundheitsurvey 1998 ergibt sich für Erwachsene (18-79 Jahre) eine Unterversorgung (< 20 ng/ml) von mehr als 55% der Bevölkerung.

Link zur Veröffentlichung / Link to the publication:

<https://www.bfr.bund.de/cm/343/vitamin-d-der-aktuelle-d-a-ch-referenzwert-aus-sicht-der-risikobewertung.pdf>

13. Gemeinsame FAQ des BfR, der DGE und des MRI. **Ausgewählte Fragen und Antworten zu Vitamin D.** Deutsche Gesellschaft für Ernährung e.V., Bonn 2012

Relevante Aussagen / Relevant statements:

Bei der Mehrheit der Bevölkerung liegt kein Vitamin-D-Mangel vor. Jedoch erreichen fast 60 Prozent der Bundesbürger die wünschenswerte Blutkonzentration des Markers 25-Hydroxyvitamin-D von 50 Nanomol pro Liter nicht.

Kommentar:

DGE: „Mangel“: <10 ng/ml, „Wünschenswert“: >20 ng/ml,

WHO: “deficiency” (Mangel): <20 ng/ml, “insufficient” (unzureichend): 20-30 ng/ml

Link zur Veröffentlichung / Link to the publication:

<https://www.dge.de/wissenschaft/weitere-publikationen/faqs/vitamin-d/#vitdversorgung>

14. Mats B Humble MB. **D-vitamin kan skydda mot svår infektion vid covid-19.** Läkartidningen, Stockholm Mai 2020 (Schwedische Ärztezeitschrift)

Relevante Aussagen / Relevant statements (Google translation):

„Ein Vitamin-D-Mangel erhöht das Risiko eines schweren Verlaufs von Covid-19. Eine Metaanalyse von placebokontrollierten Studien zeigt, dass die Vitamin-D-Behandlung im Allgemeinen vor Infektionen der Atemwege schützt.“

„In einer philippinischen Studie wurden 212 Patienten mit Covid-19 in vier klinische Schweregrade eingeteilt: mild (ohne Lungenentzündungsdiagnose), mittelschwer (verifizierte Lungenentzündung), schwer (Hypoxie, Sauerstoffsättigung ≤ 93 Prozent) und kritisch (Atemversagen / ARDS). ... Ein gefundener Vitamin-D-Mangel (unter 50 nmol / l) erhöhte das Risiko schwerwiegender Komplikationen im Vergleich zu Werten über 75 nmol / l signifikant.“

Kommentare:

- Die philippinische Studie von Alipio M. et al. ist oben unter [2] aufgeführt.
- Zitat aus privater eMail: „Wie ich gestern über die Nachrichten erfuhr, ist Vitamin D in Schweden z.Z. sehr nachgefragt, die Apotheken kommen kaum nach mit den Bestellungen.“

Link zur Veröffentlichung / Link to the publication:

<https://lakartidningen.se/opinion/debatt/2020/05/d-vitamin-kan-skydda-mot-svar-infektion-vid-covid-19>