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## Short communication

# Vitamin D and safe journey

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## Abstract

We present a hypothesis for low vitamin D as a sign of untimely relocation of the human being during its history. This improper displacement prone our species to infectious and non-infectious diseases during our life journey, low vitamin D is a sign that needs to be addressed as a marker of the unsafe journey in our lifetime not the cause for diseases that are associated with it and replacement of vitamin D is the least that we have done.

## To the editor

Life began to evolve in the oceans over 1 billion years ago. Phytoplankton as an earlier habitant of the earth took advantage of sunlight and used it as an energy source to generate carbohydrates. To protect important components of cells like DNA, RNA, and amino acids with double bonds from the phototoxic wavelength of ultraviolet B (290 nm), in this tiny factory of photosynthesis vitamin D was produced to act as a sunscreen [1]. A meanwhile adequate level of this hormone was a photochemical signal that encourages organisms to start a “safe journey” from the surface to the deep ocean to prevent excess exposure to phototoxic dosage of ultraviolet B. (signal for timely relocation and protection [2].

### Vertebrate and Vitamin D

All vertebrates need vitamin D for movement and a healthy skeleton they make it from skin exposure to the sun or by consumption of precursors from sea staff that eat phytoplankton in their food chain or from plants [3]. This skeleton gives this ability to vertebrates that move freely and settle sometimes in places that is not optimal for vitamin D production.

## Human and Vitamin D

Vitamin D has had a huge impact on the evolution of human skin color. By gradual movement toward higher latitude from the equatorial area only females who had evolved to lighter skin were able to produce enough vitamin D, and have normal pelvis anatomy to normally deliver a healthy baby; females with low vitamin D (probably dark skin with low vitamin) were excluded from reproductive cycle due to maternal complications [4]. This is the reason that residents of northern latitudes have lighter skin color now. Skin pigmentation is determined by one favoring photoprotection near the equator and the other favoring vitamin D production near the pole.

Two other histories of human movement and vitamin D go back to the industrial revolution. In the 16th century majority of big cities in Europe hosted people who immigrated from rural to urban areas, this movement was accompanied by living in homes in proximity to each other meanwhile coal consumption made cities heavily polluted, and reports showed more than 80 % of children in these cities had rickets [5]. In 1822 one century before Hess discovered sunlight exposure as a treatment for rickets (1923), Sniadecki in Warsaw said lack of sunlight was the reason for the disease that took a hundred years to be



accepted [5]. In the eighties when tuberculosis was regarded as an incurable, noninfectious disease and killed more than 20% of Britain's, George Bodington (1799–1882) had mentioned that “people such as shepherds and farmers who worked in a rural area did not usually get the disease. He advised people to copy the lifestyle of the people who are immune to the disease [6].

The Force movement of black people is another history of human movement and vitamin D. The slave trade took blacks out of Africa and settled them, among other places, across North America, Canada, and Northern Europe where for months of the year sun rays strike less directly, drastically reducing the amount of sunlight whose skin was not adapted and unable to make adequate vitamins D. In that time medical report described a disease that is similar to hypocalcemia of vitamin D deficiency, it was called «negro diseases» that seen in black slave after a period of settling; with neurological symptoms and psychosis, they were also prone to many infectious diseases [7]. The reason was untimely relocation and fast displacement of black from one continent to another continent, I would call it “slavery diseases”. Through time, human adaptations to different solar beams have become more cultural than natural. Rapid human migrations with the industrial revolution, increasing urbanization in modern life, and lifestyle changes have created mismatches between skin pigmentation and environmental conditions [8].

Although vitamin D deficiency was seen more commonly in blacks and immigrants, nowadays it is not limited to them it includes all races black, white and yellow, and not limited to one continent it is pandemic.

Is it possible that vitamin D deficiency again is a sign of inappropriate displacement of humans from one place to another place?. Vitamin D deficiency may be an alarming signal for an unsafe mankind's journey from outdoor to indoors?. Evidence show indoor activity and lack of sun exposure are a risk for premature death like obesity, smoking, and inactivity [9,10].

It will be more important when we realize during sun exposure several other byproducts are produced in the skin like luminoestrol and tachestrol which have anti proliferative & anti-inflammatory effects and they regulate epidermal growth, in the other words vitamin D production is only 15% of byproducts that are produced during solar exposure and other photo products have other benefits which will turn out in the future [11]. Prescription of vitamin D supplements to normalize 25 hydroxyl vitamin D is a very simplistic approach to the problem that has been taking place several times in our history.

During the last thirty years association of low vitamin D with several non-skeletal diseases was seen from migraine to cancers, but in trials of vitamin D supplementation little effect was seen, or doubt still exists about its benefit. This evidence may indicate low vitamin D as a marker and association, not the major cause for the above diseases [12,13].

Hundred years ago the world had an experience a viral pandemic that cost the lives of more than 50 million people,

a brilliant doctor in the Massachusetts State Guard observed that outdoor treatment of the patient with fresh air and plenty exposure of to sun decreased mortality and medication consumption, low vitamin D is now believed as a risk factor for that disaster [14,15].

New experience with COVID 19 again highlighted «low vitamin D as a risk factor for severe diseases and mortality» but our patient needs a modality of treatment that is only available in places where there is no direct sun exposure .and our governmental policy for locking down limits our shortage of outdoor activity and sun exposure [16–18]. It is worthy to mention that lack of outdoor activity is the main reason for low vitamin D synthesis, in-country like Uganda with high outdoor physical activity had a low prevalence of disease and very low mortality from COVID; Data from WHO have also shown a trend of low physical activity and severity of COVID19 [19,20].

## Conclusion

At the beginning of life, adequate vitamin D was a signal for a safe journey in phytoplanktons, it enables vertebrates to move freely, history reveals this movement and displacement of the human being from one continent to another, rural to urban was accompanied by low vitamin D that prone us to some diseases. If we have adequate sun exposure and do not receive any vitamin D supplement, then an adequate level of 25hydroxyl vitamin D (levels>30ng/dl) will be a marker of the optimal benefit of sun exposure and adequacy of outdoor activity.

Low vitamin D is a signal that our life journey is not safe and we have been displaced improperly and we are prone to the diseases that slaves get. Vitamin D deficiency should make us think again and wonder where we moved earlier in our daily lives although taking vitamin D is the least that should be done. The huge human cost might be the result of ignoring this message of nature and history.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Holick M. Phylogenetic and evolutionary aspects of vitamin D from phytoplankton to humans. In: PKT Pang and MP Schreibman (eds), *Vertebrate Endocrinology: Fundamentals and Biomedical Implications* Academic Press, Inc (Harcourt Brace Jovanovich) Orlando, FL 1989; 3:7-43.
- Holick MF. Vitamin D: A millenium perspective. *J Cell Biochem.* 2003 Feb 1;88(2):296-307. doi: 10.1002/jcb.10338. PMID: 12520530.
- Holick MF. Evolution and function of vitamin D. *Recent Results Cancer Res.* 2003;164:3-28. doi: 10.1007/978-3-642-55580-0\_1. PMID: 12899511.
- Merewood A, Mehta SD, Chen TC, Bauchner H, Holick MF. Association between vitamin D deficiency and primary cesarean section. *J Clin Endocrinol Metab.* 2009 Mar;94(3):940-5. doi: 10.1210/jc.2008-1217. Epub 2008 Dec 23. PMID: 19106272; PMCID: PMC2681281.
- Mozołowski W. Jędrzej Sniadecki (1768-1838) on the Cure of Rickets. *Nature.* 1939; 143:121.



6. Bodington G. An Essay on the Treatment and Cure of Pulmonary Consumption, On Principles Natural, Rational and Successful. London, England: Simpkin, Marshall, Hamilton, and Kent; 1906
7. Kiple KF, Kiple VH. The African connection: slavery, disease and racism. *Phylon*. 1980 Fall;41(3):211-22. PMID: 11636820.
8. Wacker M, Holick MF. Sunlight and Vitamin D: A global perspective for health. *Dermatoendocrinol*. 2013 Jan 1;5(1):51-108. doi: 10.4161/derm.24494. PMID: 24494042; PMCID: PMC3897598.
9. Alfredsson L, Armstrong BK, Butterfield DA, Chowdhury R, de Grujil FR, Feelisch M, Garland CF, Hart PH, Hoel DG, Jacobsen R, Lindqvist PG, Llewellyn DJ, Tiemeier H, Weller RB, Young AR. Insufficient Sun Exposure Has Become a Real Public Health Problem. *Int J Environ Res Public Health*. 2020 Jul 13;17(14):5014. doi: 10.3390/ijerph17145014. PMID: 32668607; PMCID: PMC7400257.
10. Cho Y, Ryu SH, Lee BR, Kim KH, Lee E, Choi J. Effects of artificial light at night on human health: A literature review of observational and experimental studies applied to exposure assessment. *Chronobiol Int*. 2015;32(9):1294-310. doi: 10.3109/07420528.2015.1073158. Epub 2015 Sep 16. PMID: 26375320.
11. Holick MF, MacLaughlin JA, Doppelt SH. Regulation of cutaneous previtamin D3 photosynthesis in man: skin pigment is not an essential regulator. *Science*. 1981 Feb 6;211(4482):590-3. doi: 10.1126/science.6256855. PMID: 6256855.
12. Lin KW. Vitamin D Screening and Supplementation in Primary Care: Time to Curb Our Enthusiasm. *Am Fam Physician*. 2018 Feb 15;97(4):226-227. PMID: 29671531.
13. Kahwati LC, LeBlanc E, Weber RP, Giger K, Clark R, Suvada K, Guisinger A, Viswanathan M. Screening for Vitamin D Deficiency in Adults: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA*. 2021 Apr 13;325(14):1443-1463. doi: 10.1001/jama.2020.26498. PMID: 33847712.
14. Brooks WA. THE OPEN AIR TREATMENT OF INFLUENZA. *Am J Public Health (N Y)*. 1918 Oct;8(10):746-50. doi: 10.2105/ajph.8.10.746. PMID: 18009962; PMCID: PMC1362338.
15. Slusky. Sunlight and Protection Against Influenza 2018 - National Bureau of working\_papers
16. Pugach IZ, Pugach S. Strong correlation between prevalence of severe vitamin D deficiency and population mortality rate from COVID-19 in Europe. *Wien Klin Wochenschr*. 2021 Apr;133(7-8):403-405. doi: 10.1007/s00508-021-01833-y. Epub 2021 Mar 15. PMID: 33721102; PMCID: PMC7957444.
17. Ghelani D, Alesi S, Mousa A. Vitamin D and COVID-19: An Overview of Recent Evidence. *Int J Mol Sci*. 2021 Sep 29;22(19):10559. doi: 10.3390/ijms221910559. PMID: 34638897; PMCID: PMC8509048.
18. Dror AA, Morozov N, Daoud A, Namir Y, Yakir O, Shachar Y, Lifshitz M, Segal E, Fisher L, Mizrahi M, Eisenbach N, Rayan D, Gruber M, Bashkin A, Kaykov E, Barhoum M, Edelstein M, Sela E. Pre-infection 25-hydroxyvitamin D3 levels and association with severity of COVID-19 illness. *PLoS One*. 2022 Feb 3;17(2):e0263069. doi: 10.1371/journal.pone.0263069. PMID: 35113901; PMCID: PMC8812897.
19. World Health Organization. GHO | By category | Prevalence of insufficient physical activity among adults - Data by World Bank income groups. WHO. 2017.
20. Chesnut WM, MacDonald S, Wambier CG. Could diet and exercise reduce risk of COVID-19 syndemic? *Med Hypotheses*. 2021 Mar;148:110502. doi: 10.1016/j.mehy.2021.110502. Epub 2021 Jan 24. PMID: 33529978; PMCID: PMC7830305.

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