POLYTECHNIC INSTITUTE OF SANTARÉM

IX INTERNATIONAL WEEK VIRTUAL

INTERNATIONALIZATION IN TIMES OF PANDEMIC:
CHALLENGES AND GOOD PRACTICES

Myths in Nutrition

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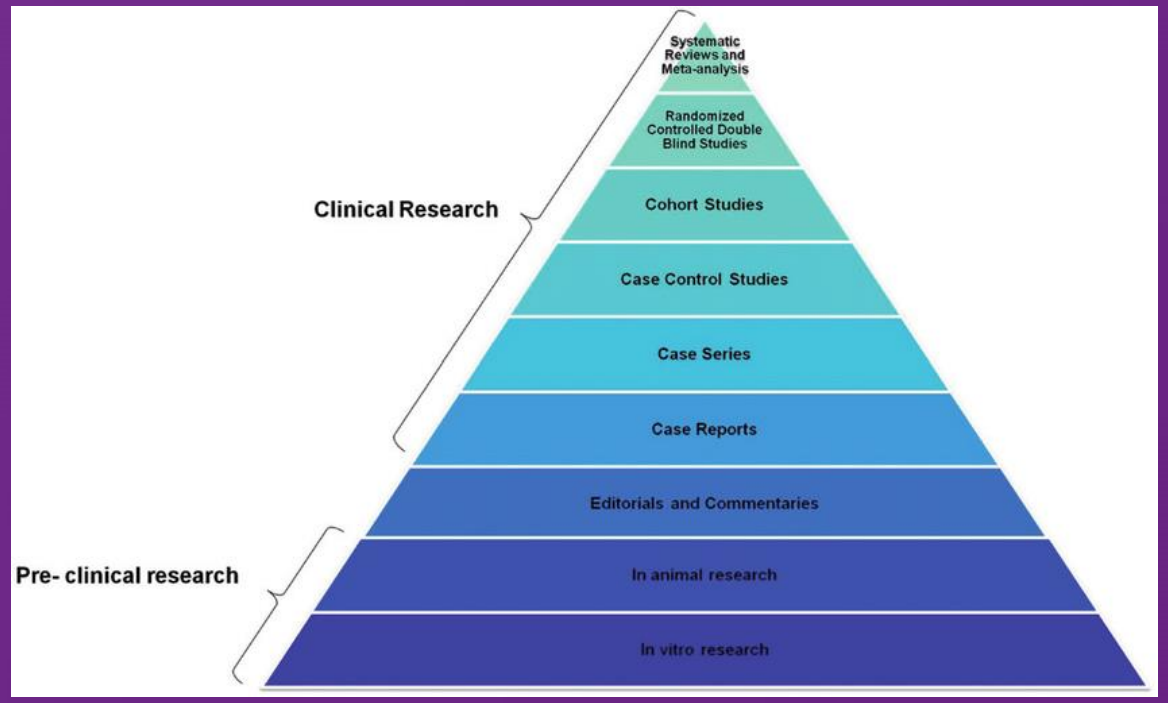
Why are there so many nutrition myths?

As people eat every day, they tend to believe that we are experts in nutrition.

"Bench coaches"

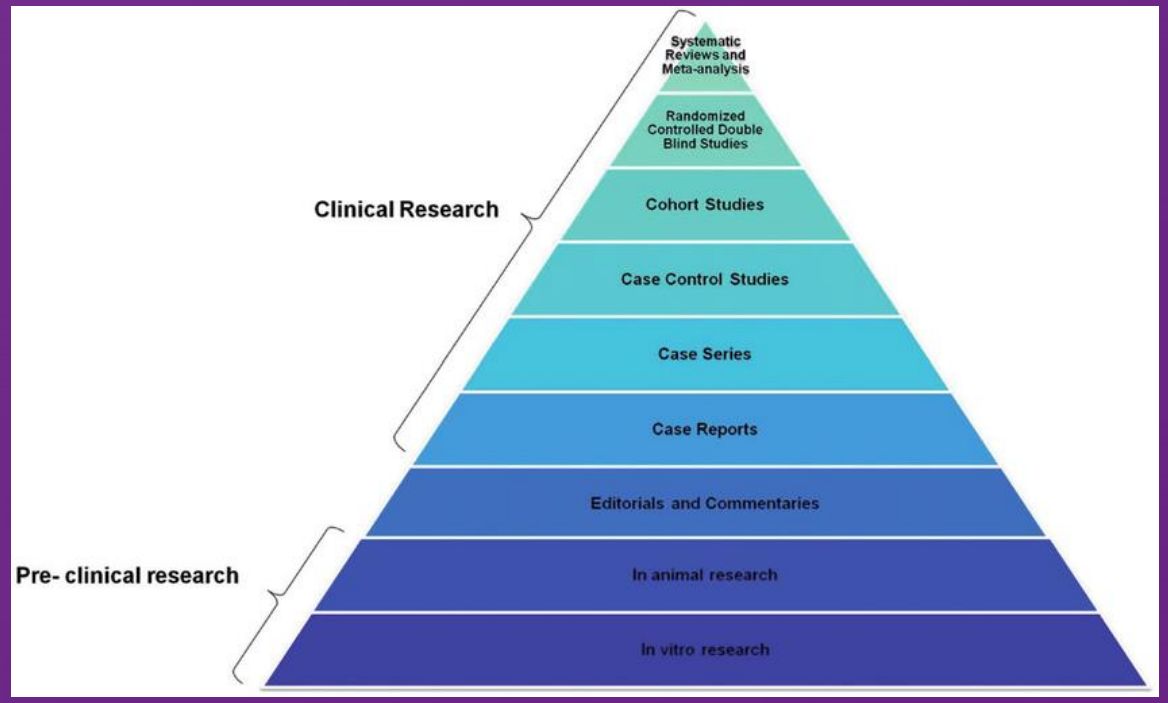
Nutrition is not an exact science

Several ways to reach the same goal



As long as they are guided by a common line:

Good quality scientific evidence.



YouTube

NETFLIX

Blogger

Instagram

Is breakfast the most important meal of the day?

"Eat breakfast like a king, lunch like a prince and dinner like a beggar"

Some consensus in recognizing that individuals who skip breakfast have a higher weight and waist circumference and a higher cardiovascular risk.

However, we cannot assume that this greater risk is solely associated with the absence of a meal, especially when we our typical breakfasts are rich in calories, sugar and saturated fat.

Meta-Analysis > BMJ. 2019 Jan 30;364:l42. doi: 10.1136/bmj.l42.

Effect of breakfast on weight and energy intake: systematic review and meta-analysis of randomised controlled trials

Katherine Sievert [1], Sultana Monira Hussain [1], Matthew J Page [2], Yuanyuan Wang [1], Harrison J Hughes [1], Mary Malek [1], Flavia M Cicuttini [3]

Breakfast skipping: slightly better weight loss.
High risk of bias, low quality studies.

Meta-Analysis > Obesity (Silver Spring). 2020 Jun;28(6):1098-1109. doi: 10.1002/oby.22791. Epub 2020 Apr 18.

Breakfast Skipping, Body Composition, and Cardiometabolic Risk: A Systematic Review and Meta-Analysis of Randomized Trials

Jonathan P Bonnet [1], Michelle I Cardel [2], Jaqueline Cellini [1], Frank B Hu [3 4 5], Marta Guasch-Ferré [3 4]

Breakfast skipping: significantly reduced body weight, increased LDL and similar body fat.

> Nutrients. 2019 Feb 13;11(2):387. doi: 10.3390/nu11020387.

A Systematic Review of the Association of Skipping Breakfast with Weight and Cardiometabolic Risk Factors in Children and Adolescents. What Should We Better Investigate in the Future?

Alice Monzani [1], Roberta Ricotti [2], Marina Caputo [3], Arianna Solito [4], Francesca Archero [5], Simonetta Bellone [6 7], Flavia Prodam [8 9 10]

Breakfast skipping: worse lipid profile, blood pressure, insulin-resistance, metabolic syndrome and lower quality dietary intake.

Meta-Analysis > Nutrients. 2020 Aug 15;12(8):2460. doi: 10.3390/nu12082460.

Breakfast Characteristics and Their Association with Energy, Macronutrients, and Food Intake in Children and Adolescents: A Systematic Review and Meta-Analysis

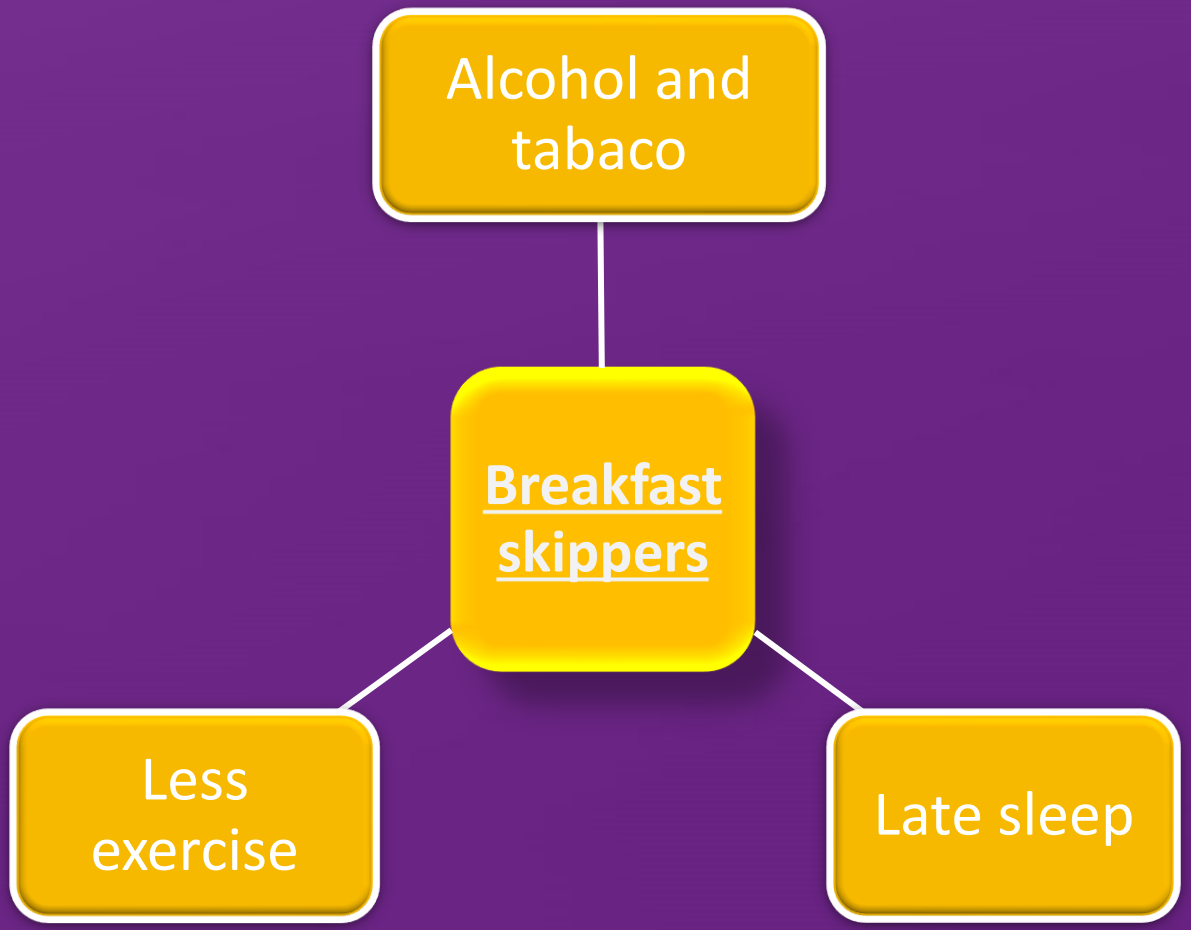
Natalia Giménez-Legarre [1 2], Paloma Flores-Barrantes [1 2], María Luisa Miguel-Berges [1 2], Luis A Moreno [1 2 3], Alba M Santaliestra-Pasías [1 2 3]

Breakfast intake: better macronutrient intake and healthier food and beverage consumption.

Chronobiol Int. 2014 Feb;31(1):64-71. doi: 10.3109/07420528.2013.821614. Epub 2013 Oct 4.

The relationship between breakfast skipping, chronotype, and glycemic control in type 2 diabetes

Sirimon Reutrakul [1], Megan M Hood, Stephanie J Crowley, Mary K Morgan, Marsha Teodori, Kristen L Knutson



- ✓ If you skip breakfast, make sure you don’t overeat later.
- ✓ If you take breakfast, make sure you choose healthy foods and eat at home.

Is sugar as addictive as cocaine?

The human being can only absorb 3 types of sugar: glucose, fructose and galactose.

Oats, whole grain bread, sweet potatoes, quinoa, etc., considered “good carbohydrates”, are made of a chain of various glucoses.

The different fruits have varying amounts of glucose, fructose and sucrose.

Table sugar (sucrose) is a combination between two of these sugars (glucose + fructose).

That is, regardless of whether we eat the "good carbohydrates" or simple sugars, what enters in our bloodstream is glucose, fructose and galactose.

Thus, if sugar was a poison as we have heard, the foods mentioned above would also be a poison and we would all be moved by ... poison!

Hypothetical sugar addiction

As we all know, the sensory reward that is obtained with sweet foods with sugar is great.

Theory:

The habituation and desensitization that our brain can suffer from repeated exposure to these foods may increase the need for sugar in order to get pleasure and then, become addicted.

Human studies ⇨ interesting dichotomy in the response by **lean vs obese adolescents**, when exposed to glucose and frutose.

Lean group: greater irrigation in the pre-frontal cortex (area associated with control and executive function)

Obese group: increase in activity in the areas most associated with pleasure and reward.

It remains to be seen what comes first: whether obesity is responsible for this response OR whether it is the greatest sense of reward that induces a greater demand for sugar and thus justifies an obesity condition.

Review > Eur J Nutr. 2016 Nov;55(Suppl 2):55-69. doi: 10.1007/s00394-016-1229-6. Epub 2016 Jul 2.

Sugar addiction: the state of the science

Margaret L Westwater [1 2], Paul C Fletcher [2 3 4], Hisham Ziauddeen [5 6 7 8]

Affiliations + expand

PMID: 27372453 PMCID: PMC5174153 DOI: 10.1007/s00394-016-1229-6

Free PMC article

Abstract

Purpose: As obesity rates continue to climb, the notion that overconsumption reflects an underlying 'food addiction' (FA) has become increasingly influential. An increasingly popular theory is that sugar acts as an addictive agent, eliciting neurobiological changes similar to those seen in drug addiction. In this paper, we review the evidence in support of sugar addiction.

Methods: We reviewed the literature on food and sugar addiction and considered the evidence suggesting the addictiveness of highly processed foods, particularly those with high sugar content. We then examined the addictive potential of sugar by contrasting evidence from the animal and human neuroscience literature on drug and sugar addiction.

Results: We find little evidence to support sugar addiction in humans, and findings from the animal literature suggest that addiction-like behaviours, such as bingeing, occur only in the context of intermittent access to sugar. These behaviours likely arise from intermittent access to sweet tasting or highly palatable foods, not the neurochemical effects of sugar.

Conclusion: Given the lack of evidence supporting it, we argue against a premature incorporation of sugar addiction into the scientific literature and public policy recommendations.

Keywords: Animal neuroscience; Binge eating; Drug addiction; Obesity; Sugar addiction.

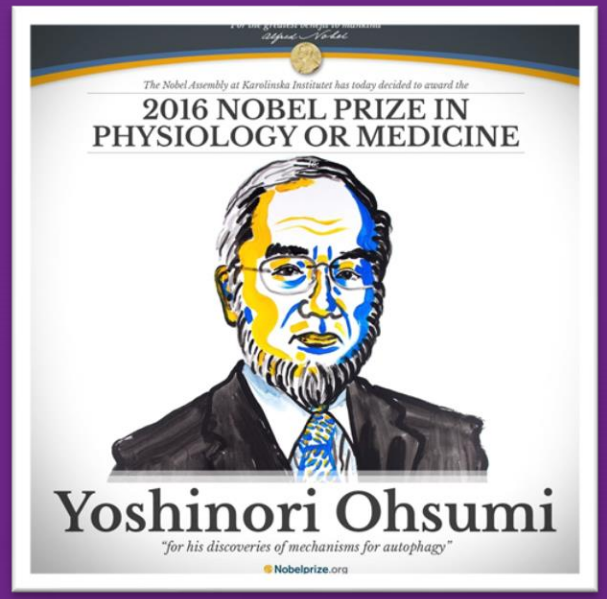
Excess sugar is undoubtedly an enemy, but it must be fairly criticized.

Affirming that sugar is not addictive or a poison, does not mean that we are suggesting an increase in its intake.

Was intermittent fasting recommended by a medicine nobel prize?

Yoshinori Ohsumi won the Nobel Prize for Medicine in 2016 due to his work on autophagy mechanisms in yeast cells, which, despite providing interesting clues for future research, does not allow categorically to say that fasting is the best option for weight loss.

Authority fallacy



Is the intermittent fasting the best option for weight loss?

The evidence demonstrates that the benefits of intermittent fasting in animals are interesting, but:

- they do not have the same social context around food;
- eating is only a biological act, not a social one.


Review > Annu Rev Nutr. 2017 Aug 21;37:371-393. doi: 10.1146/annurev-nutr-071816-064634. Epub 2017 Jul 17.

Metabolic Effects of Intermittent Fasting

Ruth E Patterson [1 2], Dorothy D Sears [1 2 3]

Affiliations + expand

PMID: 28715993 DOI: 10.1146/annurev-nutr-071816-064634

A recent review summarized all studies that demonstrate benefits of intermittent fasting in humans and reached the following conclusions:

- In 5 of the 16 studies there was no weight loss;
- In 7 of the 16 studies there was no control group and in 2 of them the control group only maintained their eating habits. This means that in 9 of the 16 studies it is not known whether the benefits derived from fasting or simply from caloric restriction;
- The studies that compared fasting from one group to another that was also in caloric restriction did not find significant differences in blood glucose, triglycerides, cholesterol fractions, hormones associated with satiety and inflammation markers.

All of this indicates that the benefits of intermittent fasting depend entirely on the **caloric restriction** they induce, which may be one more strategy but it will certainly not be "the strategy".

It is important to emphasize that weight loss in humans is a behavioral as well as a physiological process.

The evidence contradicts the opinion that intermittent fasting is the best strategy for weight loss.

Caloric restriction is mandatory and this may or may not happen with fasting.

Is there a supplement that “boosts” the immune system?

COVID-19

Everyday Health

Study: Probiotics, Vitamin D, and Other Supplements May ...

The recent data found a lower rate of infection with COVID-19 among women who used multivitamins, probiotics, omega-3 fatty acids, and vitamin ...

há 3 semanas

The Statesman

Dietitian Swati Bathwal shares probable meal ideas for homecare COVID patients

Eating a nutritious meal not only provides micro and macronutrients ... carbohydrates and healthy fats to fight the infection and recover. Eating ... Below are the top 6 important nutrition considerations which will help COVID-

há 2 horas

NutraIngredients.com

Global campaign makes plea for vitamin C and COVID-19

Global campaign makes plea for vitamin C and COVID-19 ... vitamin C into the therapeutic bag of measures in the battle against COVID-19. ... C trials just published in Nutrients – some of which are specific to COVID-19; ...

18/12/2020

Times of India

Immunity boosters to make you #CoronaSafe

While we are busy taking all possible precautions to fight the pandemic ... perhaps the only way to fight coronavirus, if not prevent it completely. ... Our body relies on these nutrients to launch an effective immune response.

23/03/2020

MedicineNet

20 Vitamins and Supplements To Boost Immune Health for ...

What vitamins can help prevent COVID-19 and other illnesses? · Vitamin C · Vitamin D · B Complex vitamins · Zinc.

01/04/2020

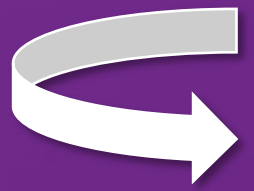
B. The Beet.

Zinc Boosts Immunity. Here's How Much You Need in Age of ...

With COVID-19 running rampant, zinc's role in immune functioning has ... by creating inflammation, or it may not work as well to fight off infections. ... Although many animal foods contain zinc, it is possible to get enough zinc ...

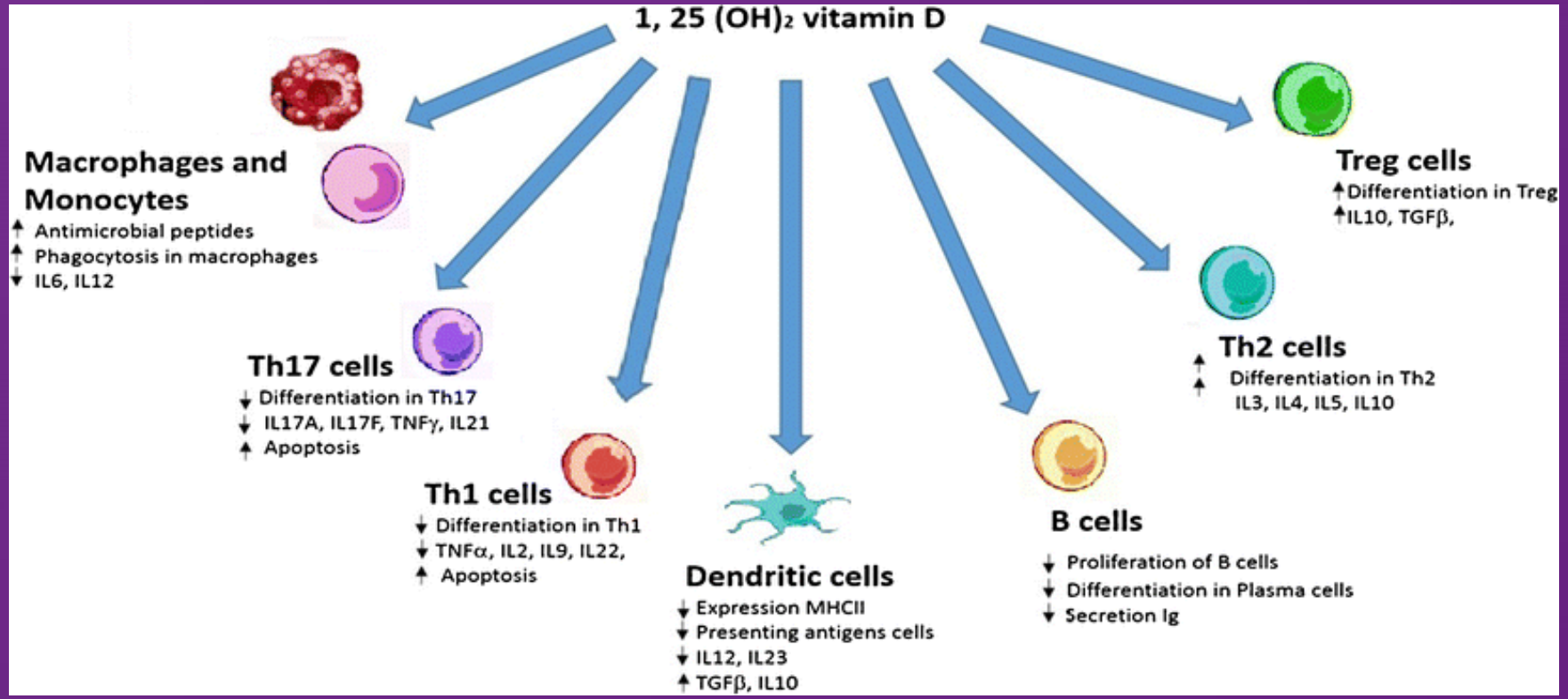
06/07/2020

Those looking for these solutions are usually people who are already more aware of their health, who have already reinforced their personal hygiene and follow other recommendations.



Much lower likelihood of infection.

Vitamin D


1, 25 (OH)2 vitamin D
Macrophages and Monocytes
Antimicrobial peptides
Phagocytosis in macrophages
IL6, IL12
Th17 cells
Differentiation in Th17
IL17A, IL17F, TNFγ, IL21
Apoptosis
Th1 cells
Differentiation in Th1
TNFα, IL2, IL9, IL22,
Apoptosis
Dendritic cells
Expression MHCII
Presenting antigens cells
IL12, IL23
TGFβ, IL10
B cells
Proliferation of B cells
Differentiation in Plasma cells
Secretion Ig
Th2 cells
Differentiation in Th2
IL3, IL4, IL5, IL10
Treg cells
Differentiation in Treg
IL10, TGFβ,

RESEARCH

Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data

Adrian R Martineau,[1,2] David A Jolliffe,[1] Richard L Hooper,[1] Lauren Greenberg,[1] John F Aloia,[3] Peter Bergman,[4] Gal Dubnov-Raz,[5] Susanna Esposito,[6] Davaasambuu Ganmaa,[7] Adit A Ginde,[8] Emma C Goodall,[9] Cameron C Grant,[10] Christopher J Griffiths,[1,2,11] Wim Janssens,[12] Ilkka Laaksi,[13] Semira Manaseki-Holland,[14] David Mauger,[15] David R Murdoch,[16] Rachel Neale,[17] Judy R Rees,[18] Steve Simpson,Jr[19] Iwona Stelmach,[20] Geeta Trilok Kumar,[21] Mitsuyoshi Urashima,[22] Carlos A Camargo Jr[23]

WHAT THIS STUDY ADDS

Meta-analysis of IPD from 10 933 participants in 25 randomised controlled trials showed an overall protective effect of vitamin D supplementation against acute respiratory tract infection (number needed to treat (NNT)=33)

Benefit was greater in those receiving daily or weekly vitamin D without additional bolus doses (NNT=20), and the protective effects against acute respiratory tract infection in this group were strongest in those with profound vitamin D deficiency at baseline (NNT=4)

These findings support the introduction of public health measures such as food fortification to improve vitamin D status, particularly in settings where profound vitamin D deficiency is common

Archives of Osteoporosis (2020) 15: 55
https://doi.org/10.1007/s11657-020-00728-1

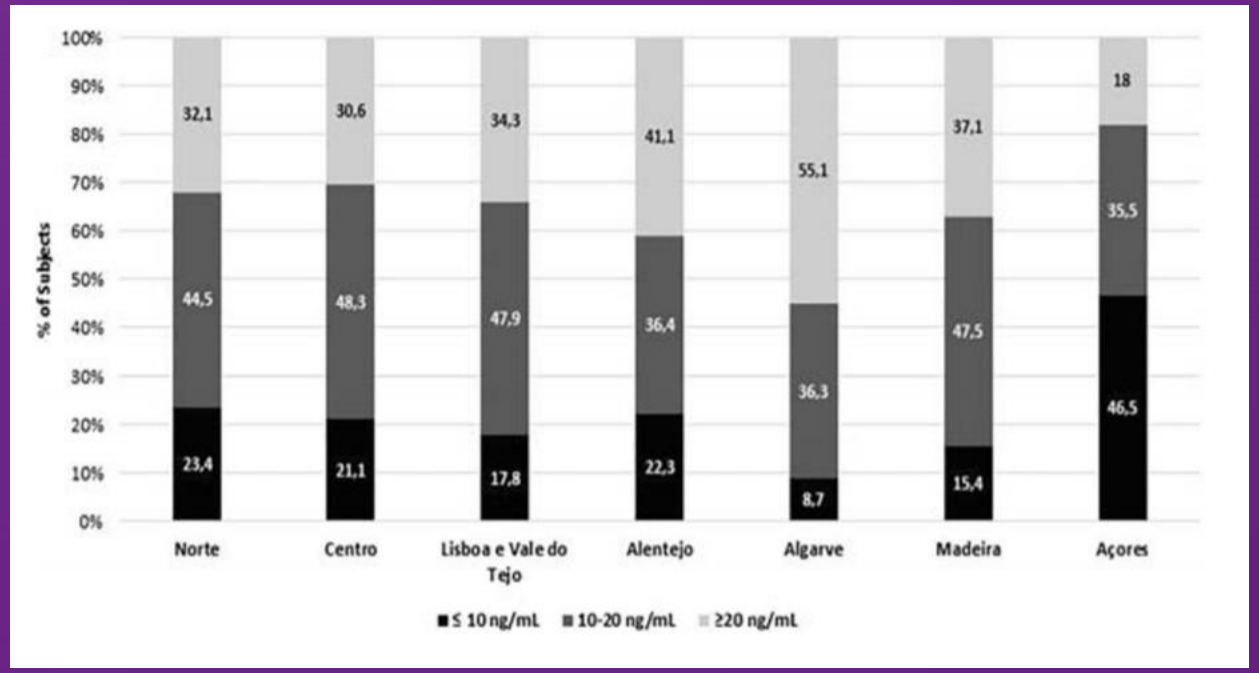
CORRECTION

Check for updates

Correction to: Prevalence of vitamin D deficiency and its predictors in the Portuguese population: a nationwide population-based study

Catia Duarte [1,2] · Helena Carvalheiro [1,3] · Ana M. Rodrigues [4,5] · Sara S. Dias [4,6] · Andréa Marques [1,7] · Tânia Santiago [1,2] · Helena Canhão [4,8,9] · Jaime Cunha Branco [4,10] · José António Pereira da Silva [1,2]

Published online: 2 April 2020



Prevalence of 21,2 % (< 25 nmol/L)

This deficit is even higher from the age of 70 (precisely the group at greatest risk for COVID-19), because our capacity to synthesize vitamin D from sun exposure decreases with age.


Infectious Disease > COVID-19

Op-Ed: Don't Let COVID-19 Patients Die With Vitamin D Deficiency

— We can't wait for perfect evidence

HEALTH | News

More than 80 per cent of hospitalized COVID-19 patients had vitamin D deficiency: study

Jackie Dunham CTVNews.ca Writer
@JaclynLDunham | Contact

Published Tuesday October 27 2020 9:00AM EDT

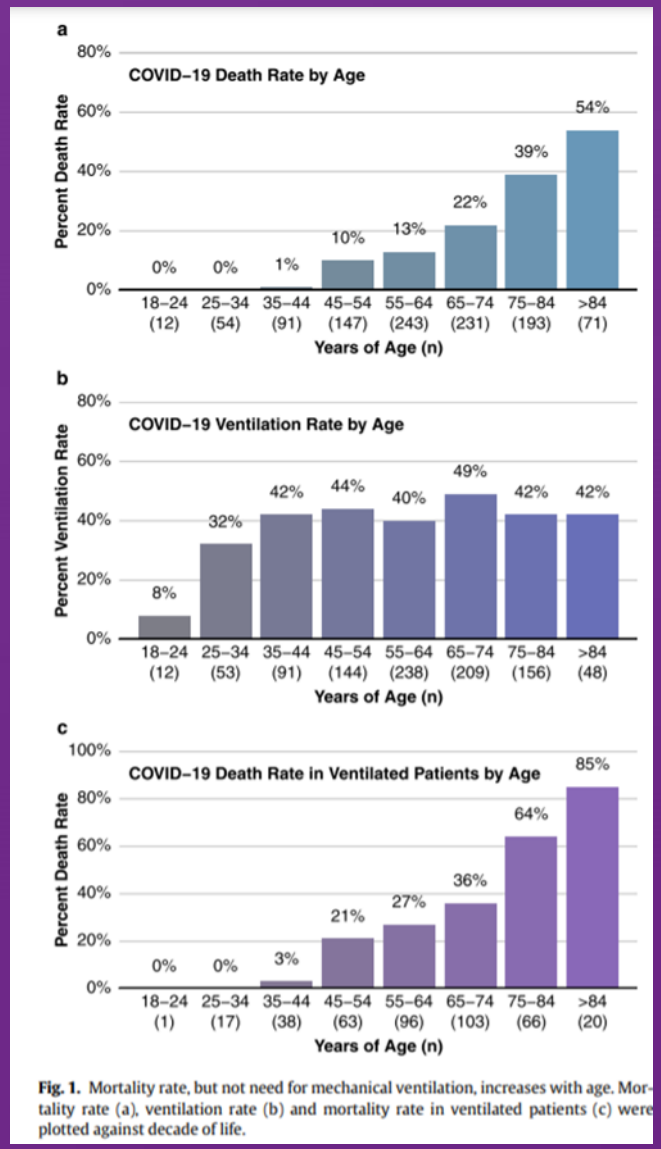
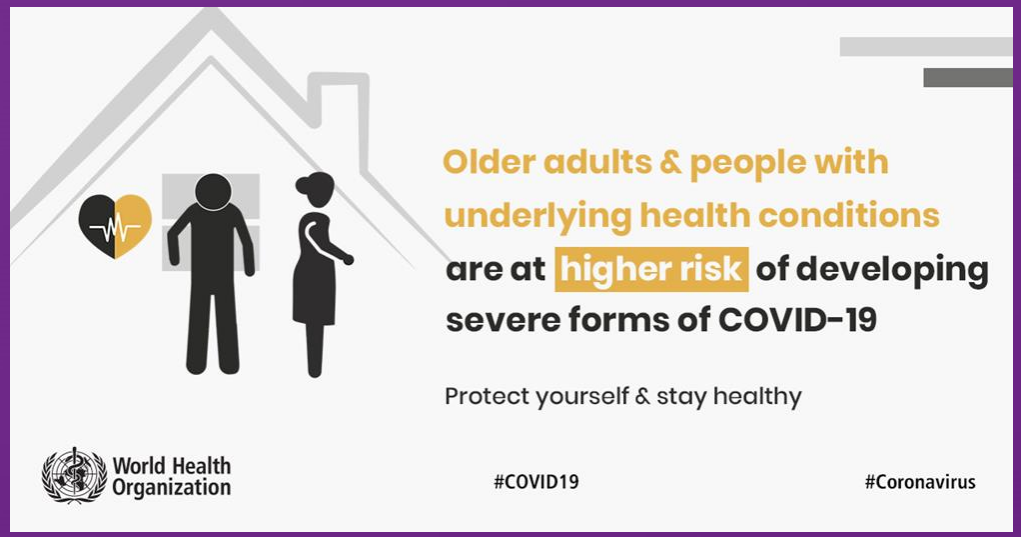


Fig. 1. Mortality rate, but not need for mechanical ventilation, increases with age. Mortality rate (a), ventilation rate (b) and mortality rate in ventilated patients (c) were plotted against decade of life.



- Sample bias (the elderly are those who most need hospitalization after infection);
- Finding that the vitamin D deficit in this population it is more prevalent than in other age groups.

Adv Respir Med. 2021;89(2):145-157. doi: 10.5603/ARM.a2021.0037.

The relationship between the severity and mortality of SARS-CoV-2 infection and 25-hydroxyvitamin D concentration - a metaanalysis

Teodoro J Oscanoa [1 2], José Amado [3 4], Xavier Vidal [5], Eamon Laird [6], Rawia A Ghashut [7], Roman Romero-Ortuno [8 9]

Affiliations + expand

PMID: 33966262 DOI: 10.5603/ARM.a2021.0037

Abstract

Introduction: There is increasing scientific interest in the possible association between hypovitaminosis D and the risk of SARS-CoV-2 infection severity and/or mortality.

Objective: To conduct a metanalysis of the association between 25-hydroxyvitamin D (25(OH)D) concentration and SARS-CoV-2 infection severity or mortality.

Material and methods: We searched PubMed, EMBASE, Google scholar and the Cochrane Database of Systematic Reviews for studies published between December 2019 and December 2020. Effect statistics were pooled using random effects models. The quality of included studies was assessed with the Newcastle-Ottawa Scale (NOS). Targeted outcomes: mortality and severity proportions in COVID-19 patients with 25(OH)D deficiency, defined as serum 25(OH)D < 50 nmol/L.

Results: In the 23 studies included (n = 2692), the mean age was 60.8 (SD ± 15.9) years and 53.8% were men. Results suggested that vitamin 25(OH)D deficiency was associated with increased risk of severe SARS-CoV-2 disease (RR 2.00; 95% CI 1.47-2.71, 17 studies) and mortality (RR 2.45; 95% CI 1.24-4.84, 13 studies). Only 7/23 studies reported C-reactive protein values, all of which were > 10 mg/L. Conclusions 25(OH)D deficiency seems associated with increased SARS-CoV-2 infection severity and mortality. However, findings do not imply causality, and randomized controlled trials are required, and new studies should be designed to determine if decreased 25(OH)D is an epiphenomenon or consequence of the inflammatory process associated with severe forms of SARS-CoV-2. Meanwhile, the concentration of 25(OH)D could be considered as a negative acute phase reactant and a poor prognosis in COVID-19 infection.

Keywords: 25-hydroxyvitamin D; COVID-19; SARS-CoV-2; metanalysis; mortality; severity; vitamin D.

Where do we stand about vitamin D?

- 1st step: access your vitamin D levels.
- If you have good levels of vitamin D, there is no need for supplementation, as it wont give you any extra protection or reinforce your immune system;
- If your levels of vitamin D are low, look for a nutritionist or doctor who can properly prescribe a vitamin D supplement;
- Special attention: elderly people, little sun exposure, no fish intake or overweight/obesity.

Vitamin C

Like vitamin D, vitamin C also plays a very important role in our immune system.

It is found in large concentrations in our white blood cells and its levels decrease considerably during a cold.

General population: 75-90 mg/day

Smokers: + 35 mg/day

Athletes: 200-250 mg/day.

There appears to be no benefit in supplementing vitamin C in a preventive form.

Food (100g)	Vitamin C (mg)
Kiwi	93
Strawberry	59
Orange	53
Lemon	53
Pineapple	48
Broccoli	89
Watercress	43
Spinach	28
Cauliflower	48
Pepper	80
Potato	20

Does it make sense to take high doses of vitamin C for prevention ?

Pharmacokinetics of vitamin C:

Intakes up to 30-180 mg/day have an absorption of 70-90%, which drops to less than 50% when these amounts increase to 1g/day, the rest being eliminated in the urine.

Given that vitamin C concentration in neutrophils/lymphocytes/monocytes has its peak at 100 mg/day (even when doses of 2500 mg/day are given), we can see that such high doses are unnecessary on a daily basis.

No need for chronic high doses of vitamin C !

And for treatment?

Just a simple cold can lead to a marked decrease in the levels of vitamin C in the leukocytes, for which the usual doses of vitamin C are not enough.

Studies in the **elderly with severe respiratory infections** reveal that supplementation with higher doses (200-1600 mg/day) **improved symptoms and reduced hospitalizations** between 19 and 36%.

In intensive care, the intravenous administration of vitamin C (1-10g/day) **in critically ill patients** demonstrates a **reduction in mortality and the need for mechanical ventilation.**

- ✓ Good nutritional status is essential for our immune system to respond to any infection effectively.
- ✓ Vitamin D is important for our immunity. Access our levels and supplement if necessary.
- ✓ For treatment, higher doses of vitamin C may make sense, but chronic high doses should not be taken for prevention.

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Thank you for listening!

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