



Impact of the association between vitamin d and breast density in the reduction of breast cancer risk

  10.56238/homeinternationalanais-132

Maria Stefania Nóbrega Batista

Lara Moreira Mendes Carneiro

1 INTRODUCTION

One in five people in the world will have cancer in their lifetime. Unfortunately, there are few modifiable factors specifically associated with reduced breast cancer risk. However, understanding the potential role of vitamin D as a modifiable mediator of a wide range of pathological conditions, including various types of cancer, is important.

2 OBJECTIVES

The objective of this study is to define whether the association between vitamin D and mammographic density can impact the reduction of the risk of breast cancer, as this knowledge will ensure better disease prevention strategies.

3 METHODOLOGIES

This is an integrative literature review carried out in August 2022 from the descriptors in Health Sciences (DeCS) together with the Boolean operator “AND”, which resulted in the descriptor: “Vitamin D” AND “Mammographic Density”. It was developed in the following virtual libraries: National Library of Medicine (PUBMED), Medical Literature Analysis and Retrieval System Online (MEDLINE), Latin American and Caribbean Literature in Health and Social Sciences (LILACS) and The Scientific Electronic Library Online (SCIELO). Inclusion criteria were: publications made in English and/or Portuguese between 2012 and 2022, which contained the selected descriptors.

4 DEVELOPMENTS

The synthesis of cutaneous vitamin D depends on the angle of incidence of sunlight, which is why there are seasonal fluctuations. Observational studies have reported an inverse association between vitamin D status and breast cancer risk. It appears that adequate serum vitamin D levels may be associated with lower mammographic density, a known risk factor for breast cancer. Breast density on mammography is a well-established risk factor for breast cancer. It decreases with age and is defined as the percentage of breast fibroglandular tissue, in addition to being affected by postmenopausal hormone therapy. The reduction in postmenopausal density can be explained by the decreasing number of epithelial and stromal cells after this



period. In addition to the possible decreased risk of breast cancer in patients with severe deficiency (<20 ng/mL), supplementation may offer other benefits. Regardless of the importance of vitamin D for breast cancer prevention, insufficient dosage should not be underestimated. Ultimately, more research is needed to understand the effect of vitamin D on mammographic density and to determine whether or not vitamin D supplementation may play a preventive role in breast cancer.

5 FINAL CONSIDERATIONS

Despite the proven antiproliferative and immunomodulatory effect of vitamin D, studies that evaluated whether the relationship between vitamin D and mammographic density can impact the reduction of breast cancer risk have heterogeneous findings. However, the insufficient dosage of vitamin D should not be disregarded, especially due to its demonstrably important effect on bone formation and calcium homeostasis.



REFERENCES

Amadou, a.; biessy, c.; rinaldi, s.; fedirko, v.; assi, n.; lajous, m.; ortiz-panozo, e.; yunes, e.; lopez-ridaura, r.; torres-mejia, g.; romieu, i. Serum 25-hydroxyvitamin d3 and mammography density among mexican women. Plos one, v. 11 (8), p. 1-14, 2016.

Bertone-johnson, e.; mctiernan, a.; thomson, c.a.; wactawski-wende, j.; aragaki, a.k.; rohan, t.e.; vitolins, m.z.; tamimi, r.m.; johnson, k.c.; lane, d.; rexrode, k.m.; peck, j.d.; chlebowski, r.t.; sarto, g.; manson, j.e. vitamin d and calcium supplementation and one-year change in mammographic density in the women's health initiative calcium and vitamin d trial. Cancer epidemiology, biomarkers & prevention, v. 21 (3), p. 462-473, 2012.

Crew, k.d. vitamin d: are we ready to supplement for breast cancer prevention and treatment? Isrn oncology, v. 2013, p. 1-23, 2013.

Duma, n.; croghan, i.; jenkins, s.; vachon, c.; neal, l.; ghosh, k.; pruthi, s. Assessing vitamin d and mammographic breast density in alaskan women. Clinics and practice, v. 10 (1253), p. 89-92, 2020

Kennel, k.a.; drake, m.t. vitamin d in the cancer patient. Current opinion in supportive and palliative care, v. 7, p. 272-277, 2013.

Straub, l.; riedel, j.; luppa, p.b.; wissing, j.; artmann, a.; kiechle, m.; seifert-klauss, v.r. mammographic density, and vitamin d levels - a cross-sectional study. Gebfra science, v. 77, p. 257-267, 2017.