



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

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1 INTRODUCTION

One in five people in the world will have cancer throughout their lives. Unfortunately, there are few modifiable factors specifically associated with reducing the risk of breast cancer. 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 GOAL

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

3 METHODOLOGY

This is an integrative review of the literature conducted 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 Social and Health 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 DEVELOPMENT

The synthesis of cutaneous vitamin D depends on the angle of incidence of the sun's rays, so there are seasonal fluctuations. And observational studies reported an inverse association between *vitamin D status* and breast cancer risk. It seems that the adequate serum level of vitamin D may be associated with lower mammographic density, a known risk factor for breast cancer. Breast density at mammography is a well-established risk factor for breast cancer. It decreases with age and is defined as the percentage of breast fibroglandular tissue, and can be affected by postmenopausal hormone therapy. The reduction of



postmenopausal density can be explained by the decreasing number of epithelial and stromal cells after this period. In addition to the possible decrease in the 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 the prevention of breast cancer, insufficient dosage should not be underestimated. Finally, more research is needed to understand the effect of vitamin D on mammographic density and determine whether or not vitamin D supplementation can play a preventive role in breast cancer.

5 FINAL CONSIDERATIONS

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



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