

# Frequency of Vitamin D Deficiency in Women with Breast Cancer

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## ABSTRACT

**Aim:** To compare the frequency of Vitamin D deficiency in patients with breast cancer as compare to controls in our population.

**Method:** This cross-sectional survey was carried out from 1<sup>st</sup> June 2015 to 31<sup>st</sup> December 2015. A total of 50 patients (25 cases and 25 controls) between 20-60 years were included in the study. Cases were those females who were diagnosed for breast cancer on histopathology while controls were the healthy normal women coming in OPD of Medical Unit-1, Bolan Medical Complex Hospital, Quetta for any other disease.

**Results:** Mean age in our study was calculated as 41.24±8.32 in cases and 37.43±7.19 in controls. Frequency of vitamin D deficiency reveals in 24(96%) in cases and 18(72%) P value <0.05.

**Conclusion:** We concluded the frequency of Vitamin D insufficiency is significantly higher in women with breast cancer when compared to the controls.

**Keywords:** Breast cancer, vitamin D deficiency, frequency

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## INTRODUCTION

Breast cancer is considered as the most frequent malignancy among females and it contributes 18% of all type of female cancers<sup>1</sup>. In Pakistan, younger age women are most commonly recorded with this morbidity when compared to Western countries where it is more common in elderly age i.e. after the 60 years.<sup>2</sup> In Asian region, Pakistani women carrying higher risk of breast cancer. The actual etiology of this disease is not properly revealed<sup>3</sup>. Various important risk factors for the development of the disease are unavoidable, e.g., female gender, elderly age, and a positive family history of the disease<sup>4</sup>.

A link between vitamin D and protection of breast cancer is established in literature. Initially, investigators suggested and reported a correlation between exposure of higher sunlight (higher vitamin D levels) and lower breast cancer rate<sup>5</sup>.

This review is aimed to compare the frequency of Vitamin D insufficiency in patients with breast cancer as compare to controls in our populations the results will be helpful for exploring the association of vitamin D insufficiency in local population and guideline for reducing the frequency of the morbidity.

## MATERIAL AND METHODS

A total of 50 patients (25 cases and 25 controls) between 20-60 years were included in the study. Cases were those females who were diagnosed for breast cancer on histopathology while controls were

the healthy normal women coming in OPD of Medical Unit-1, Bolan Medical Complex Hospital, Quetta for any other disease. The duration of study was from 1<sup>st</sup> June 2015 to 31<sup>st</sup> December 2015. All cases under treatment of any renal diseases, elevated liver enzymes, primary hyperparathyroidism, hypercalcemia, hypercalciuria, or Paget's disease and already under treatment of vitamin D deficiency were excluded from the study. Patients were informed for research protocol and consent to include their data in the study was also obtained. A blood sample of the enrolled cases was taken in a disposable syringe with the help of paramedical staff of the hospital and sent to the hospital laboratory for Vitamin D levels which were measured on machine ARCHITECT by Micro Enzyme Immune Assay (MEIA), the laboratory reports were reviewed and verified by hematologist to confirm the positive/negative vitamin D deficiency in the patients and the frequency of vitamin D deficiency was recorded.

We used SPSS (version 17.0) for data analysis. Frequency of vitamin D deficiency was calculated and presented as frequency and percentages. Chi square test was applied to compare the vitamin D deficiency in cases and controls. Odds ratio were calculated.

## RESULTS

Mean age in our study was calculated as 41.24±8.32 in cases and 37.43±7.19 in controls. Frequency of vitamin D deficiency reveals in 24(96%) in cases and 18(72%) P value <0.05 (Table 1).

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Table 1: Comparison of case and control

Vit. D deficiency	Cases	Control
Yes	24(96%)	18(72%)
No	1(4%)	7(28%)
Total	25(100%)	25(100%)

P value = <0.05

## DISCUSSION

Controversial incidence and outcome of role in relation to breast cancer is observed. Previous studies<sup>6,7,8</sup> have generally supported the association between high vitamin D levels and low risk of breast cancer but their findings are inconsistent. In this review, we aimed to find out the frequency of Vitamin D insufficiency in patients with breast cancer as compare to controls.

Imtiaz and colleagues<sup>9</sup> recorded vitamin D deficiency in 95.6% of the breast cancer women, these results support our study. A study observed Chinese population showing 96.1%<sup>13</sup> of the breast cancer women having insufficiency in Vitamin D levels, these findings correlate with our results.

Palmieri et al<sup>10</sup> conducted a study for clarifying the role of vitamin D in breast cancer progression and compared the levels of serum vitamin D in women with early and advanced stage of breast cancer and recorded that women with early-stage breast cancer had significantly higher circulating levels of 25(OH)D ( $p < 0.005$ ) while significantly lower PTH ( $p < 0.001$ ) levels were found than those who had advanced disease.

In a recent study, Alco and colleagues<sup>11</sup> evaluated the prevalence of vitamin D deficiency in breast cancer survivors, they were of the view that the frequency of serum 25-OHD deficiency/ insufficiency in Breast Cancer survivors was is higher, they further suggested that all women should be routinely evaluated for vitamin D status and those with vitamin D deficiency should be supplemented vitamin D.

Neuhouser et al<sup>12</sup> and Waltman et al<sup>13</sup> indicated insufficiency in 75.6% and 86% of the cases respectively. Neuhouser et al<sup>12</sup> further indicated the differences in serum vitamin D concentrations relating to stage of the cancer and race but did not clearly measured the quantity of vitamin D intake in routine. Similarly, no significant differences were recorded in serum vitamin D relating to season. Waltman et al<sup>13</sup> reported that despite the

supplementation of vitamin D and intake of it, serum vitamin D concentration remained low.

## CONCLUSION

Vitamin D deficiency found to be significantly prevalent in both groups evaluation of vitamin D status must be the part of a regular nutrition assessment for all women.

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