

## A comparative Study by Gender of Vitamin D Levels In Bahrainis and Expatriates Unexposed to the Sun

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**Background:** Vitamin D deficiency is a matter of concern among people of the Arabian Gulf region. Duration of exposure to the sun plays a significant role in vitamin D and calcium levels. Most Bahraini employees work indoors with limited exposure to the sun.

**Objective:** To evaluate vitamin D levels of Bahraini and expatriate subjects by gender who have non-exposure to sunlight

**Design:** An Observational Cross-Sectional Study.

**Setting:** Arabian Gulf University, College of Medicine and Medical Sciences, Physiology Department and Middle East Hospital, Bahrain.

**Method:** The study was carried out on indoor, non-exposed to the sun subjects in Bahrainis (total number =138) and expatriates (total number 117). The subjects were all non-exposed to the sun and were divided into four groups: male Bahrainis (n= 65), female Bahraini (n=73), male expatriates (n=68), and female expatriates (n=49). The study was performed from 1 October 2018 to 30 September 2019. The level of vitamin D in all four groups was evaluated. A blood sample of 5ml was obtained after securing consent and approval.

Data were analyzed using SPSS version 23.0. Two independent samples and an independent t-test were used to test the significant mean differences in different groups. P-value of less than 0.05 was considered statistically significant.

**Result:** There was no significant difference in vitamin D levels when we compared the values obtained by gender. Vitamin D level ( $18.89 \pm 0.99$  ng/ml) for all females from Bahraini and expatriate subjects was not significantly different when compared with vitamin D level ( $18.71 \pm 0.83$  ng/ml) obtained for total males, Bahraini and expatriate subjects. When we compared the level of vitamin D by nationality, i.e., Bahrainis and expatriates there was also no significant difference,  $19.35$  ng/ml and  $18.14 \pm 0.92$  ng/ml, respectively. To detect if there is a difference in vitamin D levels between males and females among Bahrainis only, our results showed that vitamin D level for female Bahrainis ( $19.08 \pm 1.42$  ng/ml) was not significantly different to vitamin level in Bahraini males ( $19.66 \pm 1.01$  ng/ml). A similar non-significant difference result was obtained between female and male expatriates;  $18.61 \pm 1.26$  ng/ml and  $17.81 \pm 1.31$  ng/ml, respectively.

When comparing vitamin D levels between only female groups, we found out that vitamin D levels in female Bahrainis and female expatriates was no significantly different between the two female groups,  $19.08 \pm 1.42$  ng/ml and  $18.61 \pm 1.26$  ng/ml, respectively. Also, there was no significant difference in vitamin D levels between male Bahrainis ( $19.66 \pm 1.01$  ng/ml) and male expatriates ( $17.8 \pm 1.31$  ng/ml).

**Conclusion:** Non-exposed Bahrainis had no significantly different level of vitamin D in comparison to non-exposed expatriates. Also, there was no significant difference in vitamin D levels when comparing male and female Bahrainis and also in male and female expatriates. No significant difference was found when comparing vitamin D levels between male Bahrainis and male expatriates. Results between female groups in both Bahraini and expatriates were not significantly different, as well. The non-significant results among all non-exposed groups could be attributed to the different types of diet or different lifestyles in all groups that compensate for sun exposure.