Vitamin D and Calcium Levels between Bahraini and Expatriate Laborers in Exposed and Non-exposed to the Sun

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Background: Vitamin D deficiency is a matter of concern among Bahrainis nowadays. The exposure period 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 and calcium levels among Bahrainis and expatriate laborers in both exposed and non-exposed to the sun.

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 four groups; non-exposed Bahrainis N=25 (Group 1), exposed Bahrainis N=94 (Group 2), non-exposed expatriates N=24 (Group 3), and exposed expatriates N=31 (Group 4) from 1 October 2018 and 30 September 2019. The levels of vitamin D and calcium in all four groups was evaluated. A blood sample of 5ml was obtained after securing the consent and approval. Vitamin D and calcium levels were evaluated in exposed and non-exposed Bahrainis (groups 1 and 2, respectively) and exposed and non-exposed expatriates (groups 3 and 4, respectively).

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: Exposed Bahrainis have higher level of vitamin D, 20.35±0.84ng/ml compared to non-exposed Bahrainis, 14±0.71ng/ml, P=0.02. Unpredictably, exposed expatriates have lower vitamin D level, 16.92±0.72ng/ml compared to 21.62±2.00ng/ml for non-exposed expatriates, P=0.02. A significant difference in vitamin D level was found between the non-exposed groups 1 and 3, 14.30±0.71ng/ml and 21.62±2.00ng/ml, respectively, P=0.001. Whereas, exposed Bahrainis, group 2 have significantly higher vitamin d level, 20.35±0.84ng/ml compared to exposed expatriates, group 4, 16.92± 0.72ng/ml, P=0.002. However, no significant difference in calcium level was found between the exposed groups 2 and 4, 9.41±0.05mg/ml and 9.45±0.05mg/ml, respectively, P=0.6. Also, almost the same level of calcium was found in both non-exposed group1 and 3, 9.99±0.06mg/ml and 10.0±0.07mg/ml, respectively, P=0.002.

Conclusion: Exposed Bahraini workers have higher vitamin D level but the same calcium levels than the non-exposed Bahrainis. Unpredictably, among expatriate groups, exposed patriates have lower vitamin D compared to non-exposed but the same calcium levels, which contradicts the findings of other studies[3,7,15,37].

Bahrain Med Bull 2021; 43 (2): 496 - 500