

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

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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. the objective of this study is to evaluate vitamin D and calcium levels among Bahrainis and expatriate laborers in both exposed and non-exposed to the sun.

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. Values were means± standard error.

Result: Exposed Bahrainis have higher level of vitamin D, 20.35 ± 0.84 ng/ml compared to non-exposed Bahrainis, 14 ± 0.71 ng/ml, $P < 0.05$. Unpredictably, exposed expatriates have lower vitamin D level, 16.92 ± 0.72 ng/ml compared to 21.62 ± 2.00 ng/ml for non-exposed expatriates, $P = 0.035$. A significant difference in vitamin D level was found between the non-exposed expatriates and nonexposed Bahrainis, 14.30 ± 0.71 ng/ml and 21.62 ± 2.00 ng/ml, respectively, $P = 0.001$. Whereas, exposed Bahrainis, group 2 have significantly higher vitamin d level, 20.35 ± 0.84 ng/ml compared to exposed expatriates, group 4, 16.92 ± 0.72 ng/ml, $P = 0.002$. However, no significant difference in calcium level was found between the exposed groups 2 and 4, 9.41 ± 0.05 mg/ml and 9.45 ± 0.05 mg/ml, respectively, $P = 0.6$. Also, almost the same level of calcium was found in both non-exposed group1 and 3, 9.99 ± 0.06 mg/ml and 10.0 ± 0.07 mg/ml, respectively, $P = 0.919$. But Ca^{++} level was found to be significantly higher in nonexposed Bahrainis compared to exposed Bahrainis 99.9 ± 0.06 mg/ml and 9.41 ± 0.5 mg/ml, respectively $P < 0.0005$. Also, nonexposed expatriates have higher Ca^{++} than exposed expatriates 10 ± 0.07 mg/ml compared to 9.45 ± 0.05 mg/ml, respectively $P < 0.0005$.

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