



Vitamin D Supplementation could improve inflammation and antioxidant markers in vitamin D deficient students with premenstrual syndrome

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Abstract— Objective: Premenstrual syndrome is a common disorder in reproductive age, which includes a wide range of symptoms that have a significant negative impact on women's quality of life. The aim of this study was to determine the effect of vitamin D supplementation on inflammatory and antioxidant indices of premenstrual syndrome (PMS) in vitamin D-deficient students. **Methods:** A total of 44 vitamin D-deficient PMS students participated in this randomized, parallel, placebo-controlled, double-blind clinical trial study. Participants were randomly assigned to receive either 50 000 IU vitamin D3 or a placebo pearl fortnightly for 4 months. At the baseline and in the last 2 months of intervention, participants were asked to complete the PMS Daily Symptoms Rating form along with taking the pearls. Blood samples were collected at the baseline and the end of the study in order to assess serum levels of 25(OH)D3, Interleukine10 and 12(IL-10, IL-12) and total antioxidant capacity (TAC). **Results:** The mean serum 25-hydroxyvitamin D levels increased by 47% after 4 months of supplementation with vitamin D and reached a normal level of 37.40 ng / ml. In the intervention group, after the end of study, serum levels of IL-10, IL-12 were 18.7 and 60.41 percent respectively (P <0.001 and P = 0.001 respectively) and serum TAC increased by 67.66% (P <0.001). Therefore, after the study, there was a significant difference in serum levels of IL-10, IL-12 and TAC between the two intervention and control groups. Also, the comparison of the effect of vitamin D and placebo on the

mean score of the total PMS symptoms showed a significant improvement in the intervention group (P <0.001). **Conclusions.** Vitamin D seems to be a safe and effective option to improve psychological symptoms, inflammatory and antioxidant indices of premenstrual syndrome (PMS) in vitamin D-deficient students.

Keywords: vitamin D, Premenstrual syndrome (PMS), antioxidant, inflammation