

# Vitamin D and Seasonal Affective Disorder in Collegiate Females During the Winter

G. Mach, A. Olson, PhD, RD, LD, M. Campos, PhD

Department of Nutrition, College of Saint Benedict Saint John's University, MN



## INTRODUCTION

- One in four young adults age 18 to 25 will suffer a depressive episode.
- Seasonal Affective Disorder (SAD) is characterized by an increase in anxiety and depression during winter months.
- Endogenous vitamin D synthesis is reduced in winter months in regions above 37° latitude due to decreased sunlight intensity and duration.
- The typical diet does not provide enough vitamin D to achieve optimal vitamin D status.
- There is an inverse relationship between solar ultraviolet (UVB) ray exposure in the winter and SAD occurrence in young adults.



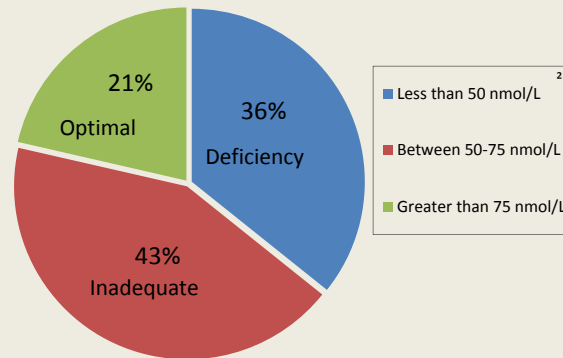
## PURPOSE

- To compare serum vitamin D (25[OH]D) status with depressive symptoms using Beck Depression Inventory (BDI)-II scores in collegiate females<sup>1</sup>.

## METHODS

- Institutional Review Board (IRB) approval was received and informed consent was obtained from all participants.
- Subjects were recruited via mass email.
- BDI-II survey was completed online early March to assess depressive symptoms.
- Scores were obtained from 136 females (ages 18-25)
- All participants were screened for antidepressant medication and vitamin D supplement use was noted.
- Caucasian women with the highest and the lowest BDI-II scores were invited to provide a serum for vitamin D analysis.
- Blood was collected early March and vitamin D was measured using a (25[OH]D) ELISA Assay (ALPCO).
- Analysis of statistical correlation and variance was completed.

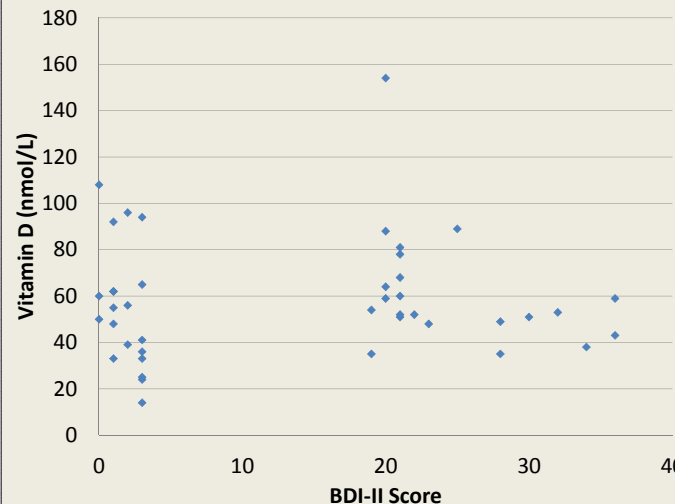
Vitamin D status of 42 subjects



Mean BDI-II scores and vitamin D measurements in 42 subjects

BDI-II Score Range	Score	Vitamin D nmol/L
Minimal (0-3)	1.8 ± 1.1	54.6 ± 26.1
Moderate-Severe (19-63)	24.4 ± 5.7	61.8 ± 25.7

Comparison of vitamin D status and BDI-II scores in 42 subjects



## RESULTS

- There was no significant correlation between BDI-II scores and serum vitamin D values.
- Observed a non-significant trend with lower depressive scoring subjects having higher vitamin D levels than subjects with higher depressive scores.
- The average serum level of vitamin D was 58.4 ± 25.8 nmol/L.
- Vitamin D levels ranged from a minimum of 14 nmol/L to a maximum of 154 nmol/L.
- Vitamin D levels were inadequate or deficient in 79% of the subjects.
- 5 out of the 8 subjects that had optimal vitamin D status (>75 nmol/L) were taking supplements.



## CONCLUSIONS

- There was no statistical correlation between vitamin D values and BDI-II scores in this population of adult females in March.
- Discovered some subjects had tanned over Christmas, which was overlooked in the screening criteria and may have affected vitamin D levels.
- More research is needed to determine the relationship between vitamin D deficiency and depressive symptoms attributed to SAD.
- Levels of vitamin D may need to drop to a critical value or the deficiency may need to be chronic as opposed to acute before depressive symptoms appear.

## ACKNOWLEDGEMENTS

- Students attending the College of Saint Benedict for their participation
- Richard Wielkiewicz for statistical expertise

1. Carmondy, D. (2005). Psychometric characteristics of the Beck Depression Inventory-II with college students of diverse ethnicity. *International Journal of Psychiatry in Clinical Practice*, 9(1), 22-28.  
 2. Institute of Medicine, Food and Nutrition Board. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: National Academy Press, 2010.