Nutritional Supplements Help Reduce the Risk of Anxiety and Depression Among Residents and Medical Students

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ABSTRACT

Several studies suggest a link between deficiencies in certain vitamins and minerals and increased rates of depression and anxiety. Research indicates that depression among medical residents is associated with poorer patient care quality and more medical errors. Supplementing these nutrients may improve mental health and patient outcomes. A pilot study at Texas Tech University Health Sciences Center assessed the nutritional status of residents and medical students. Participants were divided into a supplements group (n = 23) and a no supplements group (n = 17), and their GAD-7 and PHQ-9 scores were measured. Analysis revealed that vitamins B1, B9, B12, and D were significantly lower in the no supplement group. Additionally, vitamin Eγ and B1 showed a moderate negative correlation with GAD-7 scores. The findings indicate that those not taking supplements display significantly lower levels of essential vitamins and minerals.

BACKGROUND

Several studies have demonstrated a correlation in the deficiency of certain minerals and vitamins with an increased prevalence of depression and anxiety in the general population[1, ,2]

Cross-sectional studies have revealed that depression or depressive symptoms within medical residents are linked to poorer quality of patient care and an increased number of medical errors.

The impact of vitamin and mineral supplementation on medical students and residents may be important to improving mental health in medical trainees, and positively impact patient outcomes.

METHODS

A pilot study IRB approval for RB#: Legacy – A 23-430 obtained. After informed consent, we recruited medical students and TTUHSC PB residents aged 18 to 39. Exclusions included diagnoses such as rheumatoid arthritis, heart failure, liver cirrhosis, active cancer, chronic kidney disease, COPD, current dialysis treatment, active COVID-19, and pregnancy or nursing for females.

Participants underwent pre-screening with the PHQ-9 and GAD-7 questionnaires, and their vitamin levels, lipid profiles, thyroid function, fasting glucose, HbA1c, and trace elements were analyzed.

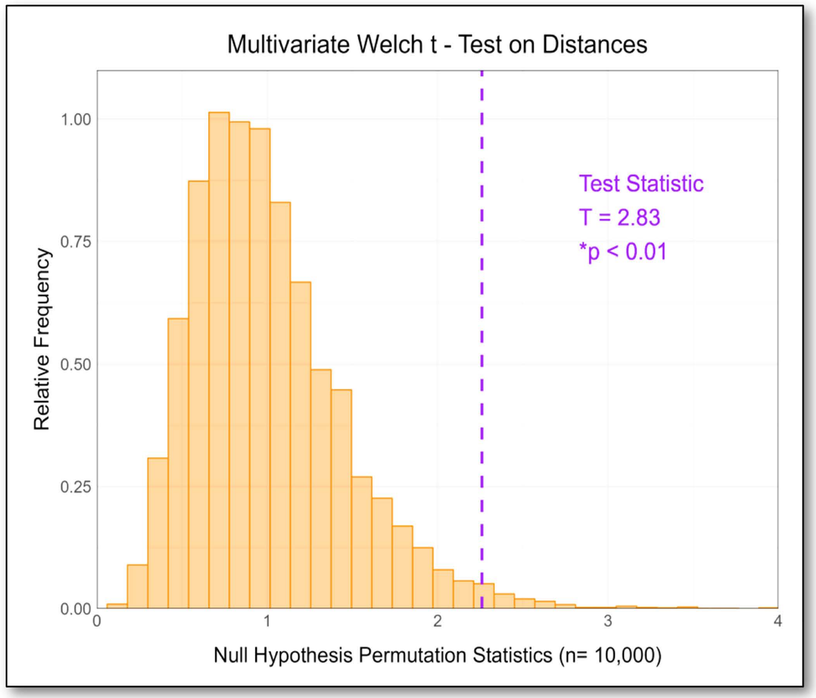

Figure 1a. Multivariate Welch t-test comparing essential vitamins and minerals in the control and

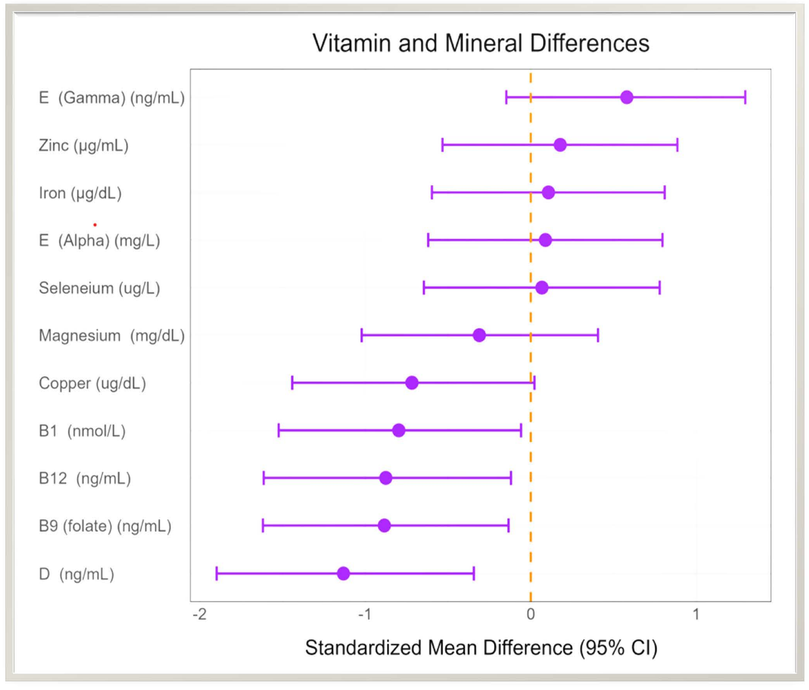

Figure 1b. Standardized mean difference of nutritional profile of subjects using supplements vs. not

Subjects were partitioned into a supplements group (n = 23) and a no supplements group (n = 17).

The Spearman correlation test was applied to measure the association of essential vitamins and minerals with GAD-7 and PHQ-9. scores.

Vitamin and mineral data were standardized prior to application of the multivariate Welch t-test based on the Euclidean distance using 10,000 permutations.

Univariate analysis used the permutational unequal variance t-test with standardized mean difference and 95% confidence intervals.

RESULTS

- Multivariate Welch t-test of nutritional profiles obtained from subjects showed vitamins B1, B9, B12, and D were significantly lower in the no supplement group.(Figure 1a)
- The mean vitamin D level was below the normal range for the no supplements group, suggesting a potential need for additional sunlight exposure or vitamin D supplementation in medical trainees.
- Across all subjects, regardless of supplementation status, vitamin Eγ and vitamin B1 had a moderate negative association with GAD-7 score (Spearman ρ = -0.40, p value = 0.03).
- In addition to nutritional status represented by serum levels of various vitamins and minerals, we additionally analyzed subjectively reported data such as number of hours slept, sleep quality, number of calories consumed daily, and type and frequency of exercise.(Figure 1b)

CONCLUSION

- Serum levels of vitamins and minerals may be negatively associated with anxiety in medical students and residents.
- Apart from Vitamin E_γ and B_1 levels, we found no significant correlation between micronutrient levels and measures of anxiety and depression.
- Medical students and residents not taking supplements unsurprisingly demonstrate significantly lower levels of essential vitamins and minerals and may have levels of essential vitamins and minerals below adequate levels.

REFERENCES

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2) Almuqbil M, Almadani ME, Albraiki SA, Alamri AM, Alshehri A, Alghamdi A, Alshehri S, Asdaq SMB. Impact of Vitamin D Deficiency on Mental Health in University Students: A Cross-Sectional Study. Healthcare. 2023; 11(14):2097. https://doi.org/10.3390/healthcare11142097