



CORRELATION ANALYSIS BETWEEN MICRONUTRIENT IMBALANCE AND THE INCIDENCE OF SEASONAL RESPIRATORY INFECTIONS AMONG MEDICAL STUDENTS

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Participants: 80 students (aged 18–22) divided into Exposure Group (n=50, <400g/day fruits/vegetables) and Control Group (n=30, >400g/day

ABSTRACT

This study evaluates the impact of vitamin deficiencies, specifically 25(OH)D and B12, on the immune resistance of medical students. A prospective cohort study (Protocol No. TDTU-2026-IRB-047) identified a significant correlation between low serum micronutrient levels and increased incidence of respiratory infections (OR = 2.45; 95% CI [1.15–5.20]).

This study evaluates the impact of vitamin deficiencies, specifically 25(OH)D and B12, on the immune resistance of medical students. A prospective cohort study (Protocol No. TDTU-2026-IRB-047) identified a significant correlation between low serum micronutrient levels and increased incidence of respiratory infections (OR = 2.45; 95% CI [1.15–5.20]).

Methodology

Participants: 80 students (aged 18–22) divided into Exposure Group (n=50, <400g/day fruits/vegetables) and Control Group (n=30, >400g/day).

Diagnostics: Serum 25(OH)D, B12, and Folate measured using CLIA and ELISA. Statistics: SPSS v.26; OR, 95% CI, Fisher's Exact Test (p < 0.05).

Results and Data Visualization

Table 1: Serum Micronutrient Levels and Clinical Outcomes

Indicator	Exposure Group (n=50)		Control Group (n=30)	p-value
Vitamin D deficiency (<20 ng/ml)	65%		30%	0.018
B12 deficiency (<200 pg/ml)	40%		15%	0.022

Respiratory infection incidence	58%		28%	0.015
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Key findings indicate significantly higher infection rates in the exposure group. Vitamin D deficiency was observed in 65% of participants and strongly correlated with infection risk.

Discussion

The findings align with WHO reports on global micronutrient deficiencies. Consistent with Holick's studies, low Vitamin D impairs antimicrobial peptide production. Additionally, a novel observation was the association between low B12 levels and increased academic fatigue.

Conclusion

Micronutrient status plays a critical role in maintaining immune function. Implementation of dietary interventions and routine monitoring is recommended for student populations

References:

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