School absenteeism: Can better nutrition be a solution?

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BACKGROUND & OBJECTIVE

Poor physical health is a strong contributor to school absenteeism. Although physical health is heavily influenced by nutritional status, studies examining nutrition and absenteeism are few.

The objective of this study was to determine whether nutritional status, measured by dietary intake and nutrient biomarkers, are associated with school absenteeism due to illness/injury in children and adolescents (6-18 years) in US.

METHODS

Data from NHANES 2003-08 cycles were used to estimate nutrient intake from food and food + supplements, nutrient biomarker levels, and school absenteeism per year. Children and adolescents 6-18 years with valid day 1 dietary recall, valid 30-day supplement use, not pregnant or breastfeeding, and with valid answers to absenteeism question were included.

Nutrient biomarker levels were obtained from NHANES laboratory data files. Children were classified into biomarker categories based on clinically relevant cutpoints (ie, nutrient sufficient, deficient, etc.) or tertiles of biomarker distribution levels, when biomarker cutoffs were not available, or the number of children in a given category was less than 100.

Usual dietary intake was derived using the National Cancer Institute method with data from two valid 24-hr dietary recalls and a 30-day supplement use questionnaire. School absenteeism data were obtained by the Medical Conditions Questionnaire.

Negative binomial regression models were used to estimate the incidence rate ratios (IRRs) of absenteeism and predict mean days of missed school per year.

RESULTS

Table 1. Population Characteristics and Absenteeism Data (N=7429)

Demographic Characteristic	Mean (SE)
Age (y)	12.0 (0.10)
Males (%)	51.1 (0.95)
Females (%)	48.9 (0.95)
BMI (%)[a]	
Underweight	3.3 (0.30)
Normal	63.1 (1.41)
Overweight	16.7 (0.89)
Obese	16.9 (1.03)
Supplement use (%)	29.4 (1.26)
Summary of Absenteeism Data	
Reported missing school days due to illness/injury, n (%)	5,131 (77)
# of days missed, mean (SE)[b]	4.00 (0.13)
Predicted # of missed school days, mean[c]	3.99
Participants missing ≤ the predicted mean of days missed, n (%)	5,162 (64)
Participants missing > the predicted mean of days missed, n (%)	2,267 (36)

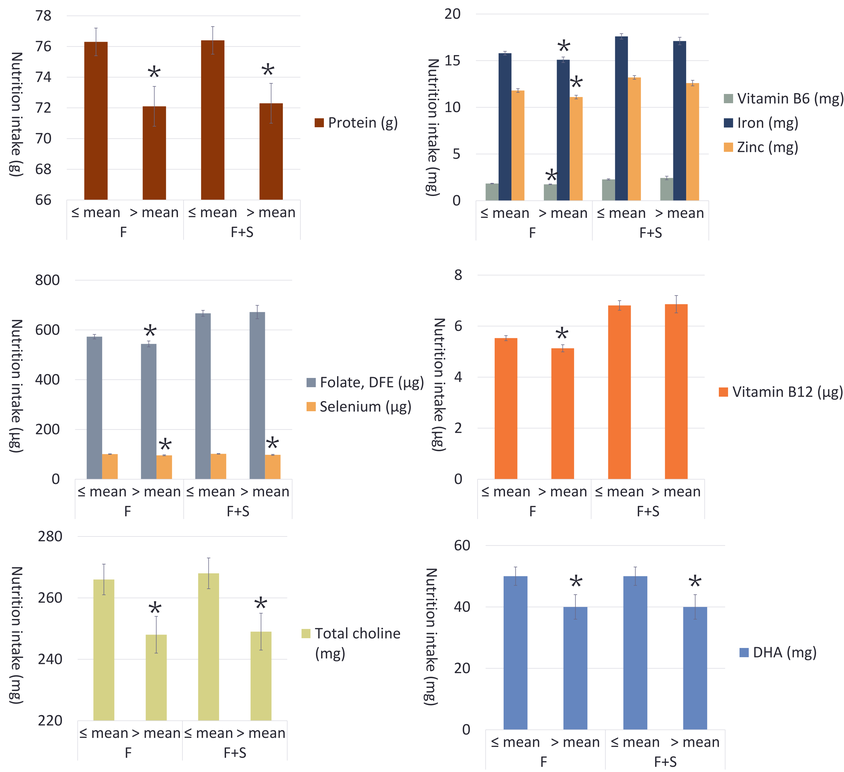
[a]n=7,370; [b]Days missed over the last 12 months, including participants who did not miss any school or workdays; [c]Based on negative binomial regression modeling

Table 2. School absenteeism and nutrient adequacy as evaluated by biomarker levels

Nutrient	IRR[a]		Additional absent days[a]	
	Mean ± SE	p-value	Mean ± SE	p-value
Folate[b]	1.16 ± 0.09	0.05	0.57 ± 0.28	0.04
B12	1.29 ± 0.12	0.01	0.94 ± 0.37	0.01
Iron[c]	1.36 ± 0.17	0.02	1.13 ± 0.52	0.03

[a]IRRs of absenteeism or more school absent days per year for the lowest tertile or depleted group compared to the highest tertile or non-depleted group; [b]measured by serum total folate; [c]measured by serum ferritin in female 12-18 years

Figure 1. Usual Nutrient Intake (Mean ± SE) from Food Alone (F) and Food + Supplements (F+S) by Absenteeism Category



≤ mean: missing days ≤ the predicted value; > mean: missing days > the predicted value
*Lower intakes compared to the group with absent days less than the predicted mean, p<0.05

CONCLUSIONS

Lower nutritional status of protein and several essential micronutrients were associated with higher school absenteeism. The negative association may be corrected by improving dietary habits, which may include more fortified food and dietary supplements.

Future studies are needed to ascertain whether more nutrient intakes, particularly for nutrients not commonly found in the typical American diet or supplements, is an effective intervention to reduce school absenteeism.

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