Fatigue and Dietary Habits of Medical Students

Aidan Zubak[1], Virginia Uhley Ph.D.,RDN[2].

[1]Class of 2023 M.D. Candidate, Oakland University William Beaumont School of Medicine
[2]Department of Family Medicine and Community Health, Beaumont Health System

OAKLAND UNIVERSITY WILLIAM BEAUMONT

Introduction

- Fatigue is a common symptom reported by medical students in response to a high stress environment.
- Poor nutrition status and increased levels of fatigue have been shown to have negative impacts on cognitive performance and academic achievement
- The goal of this study is to identify if dietary content and habits that are associated with reported fatigue levels of medical students.

Aims and Objectives

A) To assess current dietary habits of OUWB medical students.

B) To assess and quantify reported fatigue levels of M3 and M4 OUWB medical students.

Methods

Survey

- Evaluate dietary habits and FAS
  - This was accomplished with a comprehensive survey discerning both healthy and unhealthy dietary habits based on: the MIND (Mediterranean-DASH) food frequency questionnaire (FFQ) and Michielsen et al Fatigue Assessment Scale (FAS)
- Medical students in M3 and M4 years were invited via email to participate and complete the survey questionnaire online using Qualtrics.

Data Analysis: Two-sample t-test

- Twenty-four students completed the survey
- Survey responses were divided into healthy and unhealthy dietary habit groups based on a point based system according to recommended dietary habits
- A two sample t-test was used to determine if healthy habits diet group vs unhealthy diet habits group had statistically different median FAS score

Data Analysis: Correlation analysis and Individual dietary habits

- To determine statically significant difference FAS median scores among individual dietary habits
- To determine any statistically significant correlations between dietary habits and FAS scores

Results

Two sample T-test

	Unhealthy (n=14)	Healthy (n=10)	Total (n=24)	P-value
FAS, Median (IQR)	25.0 (20.0, 33.0)	19.0 (18.0, 24.0)	23.0 (18.0, 32.0)	0.0822[1]

Correlation Analysis

Spearman Correlation Coefficients (r)

	Q6	Q7	Q8	Q9	Q10	Q12	Q13	Q14	Q15	Q16	Q17	Q18
r	0.30	0.43	0.05	0.29	0.52	0.63	0.63	0.07	0.62	0.48	0.95	0.48

r value > 0.7 indicates strong correlation

Whole grains FAS by serving size

	Less than FAS score of 23 (n=11)	Greater or equal than FAS score 23 (n=12)	Total (n=23)	P-value
Whole grains Serving size, Median (IQR)	10.0 (5.0, 15.0)	6.0 (3.0, 7.0)	7.0 (4.0, 10.0)	0.0347[1]

Fish FAS by serving size

Analysis Variable : FAS for Fish serving size

Serving size	N Obs	N	Min	Lower Quartile	Median	Upper Quartile	Max	Mean	Std Dev
1	17	16	15.0	20.0	24.0	33.0	40.0	26.8	7.8
2+	6	6	15.0	17.0	18.5	22.0	26.0	19.5	3.9

P-value between FAS scores for 1 and 2+ serving size of fish is 0.0383

Conclusions

- Reported dietary intake levels of fish and whole grains were shown to have a significant association with reported fatigue levels, indicating that nutrient intake would be an important variable to consider by medical students experiencing fatigue.
- Although we did not find any statistically significant differences in fatigue levels between other healthy dietary habits vs unhealthy dietary habits this may be due to the small sample size.
- Based on **the significant findings relating to fish and whole grains**, further investigation into their effects on fatigue would be interesting.
- Future studies that include a larger sample size of medical students using a randomized controlled trial design with a placebo group and a intervention group with a diet high in fish and whole grains could provide further insight into the impact these foods on fatigue levels.
- Overall, the effect of diet on fatigue levels, particularly medical students, is an important field to be further investigated.

References

Haß U, Herpich C, Norman K. Anti-Inflammatory Diets and Fatigue. *Nutrients*. 2019;11(10):2315. Published 2019 Sep 30. doi:10.3390/nu11102315

Inglis JE, Lin PJ, Kerns SL, et al. Nutritional Interventions for Treating Cancer-Related Fatigue: A Qualitative Review. *Nutr Cancer*. 2019;71(1):21-40. doi:10.1080/01635581.2018.1513046

Lee JY, Chu SH, Jeon JY, Lee MK, Park JH, et al.: Effects of 12 weeks of probiotic supplementation on quality of life in colorectal cancer survivors: a double-blind, randomized, placebo-controlled trial. Dig Liver Dis 46, 1126–32, 2014. doi: 10.1016/j.dld.2014.09.004 [PubMed: 25442120]

Makowski MS, Trockel MT, Menon NK, Wang H, Katznelson L, Shanafelt TD. Performance Nutrition for Physician Trainees Working Overnight Shifts: A Randomized Controlled Trial. Acad Med. 2021 Nov 9. doi: 10.1097/ACM.0000000000004509. Epub ahead of print. PMID: 34753859.

Makowski MS, Shanafelt TD, Hausel A, Bohman BD, Roberts R, Trockel MT. Associations Between Dietary Patterns and Sleep-Related Impairment in a Cohort of Community Physicians: A Cross-sectional Study. *Am J Lifestyle Med*. 2019;15(6):644-652. Published 2019 Sep 10. doi:10.1177/1559827619871923

Michielsen HJ, De Vries J, Van Heck GL, Van de Vijver AJR, Sijtsma K. Examination of the dimensionality of fatigue: the construction of the Fatigue Assessment Scale (FAS).

Tardy AL, Pouteau E, Marquez D, Yilmaz C, Scholey A. Vitamins and Minerals for Energy, Fatigue and Cognition: A Narrative Review of the Biochemical and Clinical Evidence. *Nutrients*. 2020;12(1):228. Published 2020 Jan 16. doi:10.3390/nu12010228

Wahls T, Scott MO, Alshare Z, Rubenstein L, Darling W, Carr L, Smith K, Chenard CA, LaRocca N, Snetselaar L. Dietary approaches to treat MS-related fatigue: comparing the modified Paleolithic (Wahls Elimination) and low saturated fat (Swank) diets on perceived fatigue in persons with relapsing-remitting multiple sclerosis: study protocol for a randomized controlled trial. Trials. 2018 Jun 4;19(1):309. doi: 10.1186/s13063-018-2680-x. PMID: 29866196; PMCID: PMC5987638.

Yoshikawa T, Tanaka M, Ishii A, Watanabe Y. Association of fatigue with emotional-eating behavior and the response to mental stress in food intake in a young adult population. Behav Med. 2014;40(4):149-53. doi: 10.1080/08964289.2013.833082. PMID: 24965512.

Zick SM, Colacino J, Cornellier M, Khabir T, Surnow K, Djuric Z. Fatigue reduction diet in breast cancer survivors: a pilot randomized clinical trial. *Breast Cancer Res Treat*. 2017;161(2):299-310. doi:10.1007/s10549-016-4070-y

Acknowledgements

Thanks to Jacob Keeley, MS for his immense help with data analysis