The Relationship Between Dietary Fiber Intake and Perceived Stress in College Students

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Introduction

For many young adults, college is the foundation for the rest of their lives. With drastic changes and academic coursework comes stress. According to an American Psychological Association survey, less than half of respondents reported very good mental health.[1]

The body's response to stress can disrupt the immune, digestive, cardiovascular and reproductive systems. Eventually, the persistent pressure on the body can lead to illnesses like heart disease, diabetes, and mental disorders. Stress can also change lifestyle behaviors, including dietary patterns, alcohol intake and smoking status.[2]

While mental health concerns are high, fiber intake is low. Current research is looking into dietary patterns and their affect on stress, however, there is limited research regarding the affects of stress and how it is linked to dietary fiber intake.

Fiber: Why is it Important?

Dietary fiber is a type of carbohydrate that the body cannot digest. It decreases the risk of cardiovascular disease, type 2 diabetes, certain cancers, and weight gain, while also supporting digestive health through laxation, fermentation, and beneficial effects on gut microbiota. The Academy of Dietetics and Nutrition stated that the adequate intake for fiber is 38 grams per day for males and 25 grams per day for females.[3] In the US, 5% of adults consume the recommended amount. Young adults consume half of the adequate intake of fiber.[4]

High Fiber Foods[3]		
Raspberries	½ cup	4 g
Peas	½ cup	8 g
Sweet Potato	½ cup	4 g
Oatmeal	¾ cup	3 g
Almonds	¼ cup	4.5 g

Methods

This study is part of the College Health and Nutrition Assessment Survey (CHANAS), an ongoing, cross-sectional study that collects and examines how lifestyle factors affect students' health. This data was collected between 2012 to 2018.

Students (n=3,251; 68% female) were recruited as part of an introductory nutrition course at UNH. Informed consent was necessary to participate (UNH IRB #5524).

Perceived stress scores were assessed via online questionnaire using Cohen's Perceived Stress Scale (range 0 to 40). Fiber intake (g/day) was measured via three-day food records and nutrient analysis software (Diet and Wellness+). Body mass index was calculated via measured height and weight.

Descriptive data are presented as means ± SE or percentages. ANCOVA and Pearson correlations examined group differences and associations, respectively, with gender, age, BMI, smoker status, alcohol use, financial situation, and physical activity serving as covariates.

Objective

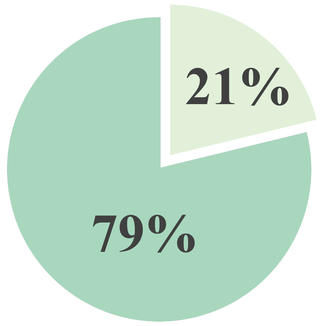
To examine the relationship between average dietary fiber intake and perceived stress scores in college students, between the ages of 18 to 24 years old.

Perceived Stress Scale[5]

In the last month, how often have you felt…
1. Upset because of something that happened unexpectedly?
2. You were unable to control the important things in your life?
3. Nervous or "stressed out"?
4. Confident in your ability to handle your personal problems?
5. Things were going your way?
6. You could not cope with all the things you had to do?
7. Able to control irritations in your life?
8. You were on top of things?
9. Angered due to things that were outside of your control?
10. Difficulties piling up so high you could not overcome them?

Never	Almost Never	Sometimes	Fairly Often	Often
0	1	2	3	4

Reported Dietary Fiber Intake*



Of those Who Met the Recommendation
Male 10%
Female 90%

*USDA Fiber Recommendation is 14 grams per 1,000 calories

Mean Dietary Fiber Intake Between Genders

Male	Female	p-value
9.0±0.2	12.0±0.1	<0.0001

*Values reported as g/1000kcal/day; Mean±SE

Mean BMI Between Stress Levels

Low	Moderate	High	p-value
23.3±0.1	23.46±0.1	24.0±0.3	0.06

*Values reported as kg/m^2; Mean±SE

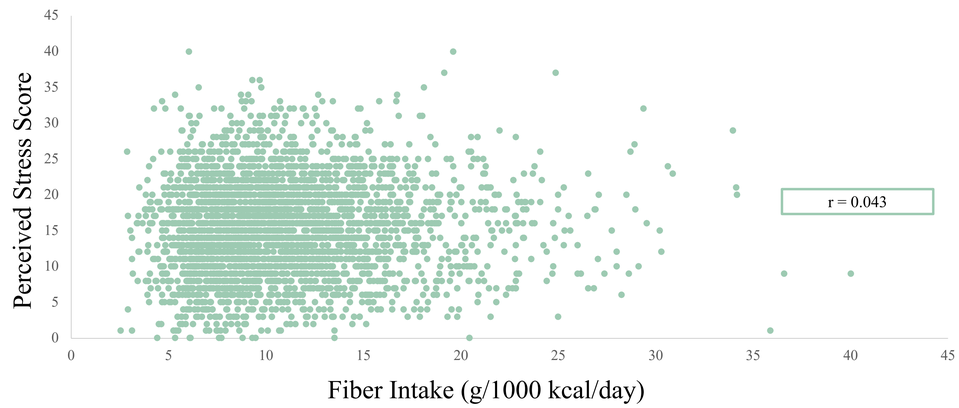
Results

The mean dietary fiber intake was 11.01±0.08 g/1000 kcal per day, which is less than the recommended daily dietary fiber intake (14 g/1000kcal). BMI was higher among students that did not meet fiber recommendations compared to those who did (23.6±0.07 vs. 22.7±0.14; p<0.0001).

Overall, the mean perceived stress score was 15.4±0.1, a moderate level of perceived stress. On average, females reported a higher overall perceived stress score compared to males (16.2±0.1 vs.13.6±0.2; p<0.01).

A weak, positive correlation (r=0.043; p=0.013) between dietary fiber intake and perceived stress scores was observed.

Relationship Between Fiber Intake and Perceived Stress



Conclusion

Consistent with other research, we found a low fiber intake among young adults, however, we did not observe a robust relationship between dietary fiber intake and perceived stress. Future research should examine effects of stress and consuming the recommended amount of fiber.

Acknowledgements

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