The Association Between Food and Physical Exercise in Childhood to Physical Health 30 Years Later

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Introduction

In United States public schools, the National School Lunch Program, School Breakfast Program, and Special Milk Program are all federally funded programs that help provide nutritious meals at schools for a reduced-price or free-price for students that qualify under specific guidelines. (USAGov) In addition, some states provide additional funding for school meals. However, the average consensus is that not all students have an adequate quality breakfast. The 2019 and 2021 national Youth Risk Behavior Survey conducted as part of the CDC's Morbidity and Mortality Weekly Report identified that 75% of students in the 2021 study didn't have breakfast daily which increased from the 66.9% surveyed in 2019. (Michael, S. L., 2023) An adequate breakfast is known to be beneficial and contribute to student's academic performance (Adolphus et al, 2013) Moreover, skipping breakfast is linked to weight gain and influences of overweight and obesity. (Wicherski, J. et al, 2021).

Moreover, less than ¼ of childrens 6-17 ages participate in 60 minutes of physical activity every day. (Merlo, 2020) Physical activity is known to increases well-being of adolescents and self-satisfaction. It contributes to shaping their body and improving physical appearance which is a very important part of self-image in the age group. (Pašková, L., 2010) Physical activity is also associated with increased aspects of well-being, life satisfaction, and has positive effects on one's cognitive performance.

Methods

Sample

- Respondents (n=20,745) were drawn from the first and fifth wave of The United States National Longitudinal Survey of Adolescent Health (AddHealth), a national longitudinal study of adolescent health from 1994-2008. The first wave of the AddHealth dataset was taken from surveys in 1994-95 and the fifth wave of the AddHealth dataset was surveyed in 2016-18.

Measures

- I created a binary variable that reflects if one had a quality breakfast. If the individual responded with having a food with protein, another with grain, and fruit/juice, they would have received a quality breakfast (1), if not, they would have been marked as not having a quality breakfast (0).
  - The variable summarizes 9 different questions into one: *What do you usually have for breakfast on a weekday morning? Milk, coffee or tea, cereal, fruit, juice, eggs, meat, snack foods, bread, toast, or rolls, and other items.*
- I created a binary variable that summarized if they have had exercise approximately 5 days per week.. I condensed three questions: *In an average week, on how many days do you go to physical education classes at school? During the past week, how many times did you do exercise, such as jogging, walking, karate, jumping rope, gymnastics or dancing? During the past week, how many times did you play an active sport, such as baseball, softball, basketball, soccer, swimming, or football?*
- *I created a quantitative variable based off the Body Mass Index formula to calculate the BMI for each constituent and created a variable that indicated if one fell within a target BMI (18.5-29.9).*

Research Questions

- Is there a long-term correlation (30 years) with one's access to a quality breakfast and physical exercise to physical well-being (BMI score)?
  - Is food or physical exercise more influential than the other?

Results

Bivariate

- ANOVA analysis showed that having a quality breakfast was significantly associated with a targeted BMI (f-value=6.425, p = 0.0113).
- ANOVA analysis shows that physical exercise weren't significantly associated with a targeted BMI (f-value=1.777 , p= 0.149).

Multivariate

- Logistic regression analyses showed that a quality breakfast was significantly more likely than physical exercise in impacting one's BMI (OR=1.2, p = <0.0127).
- Physical exercise as an explanatory variable weren't significantly associated to one's BMI target nor was there an interaction between a quality breakfast and physical exercise.
- For constituents who had get a quality breakfast, they were 20% more likely to fall within the target BMI range compared to those who did not have a quality breakfast.

Figure 1

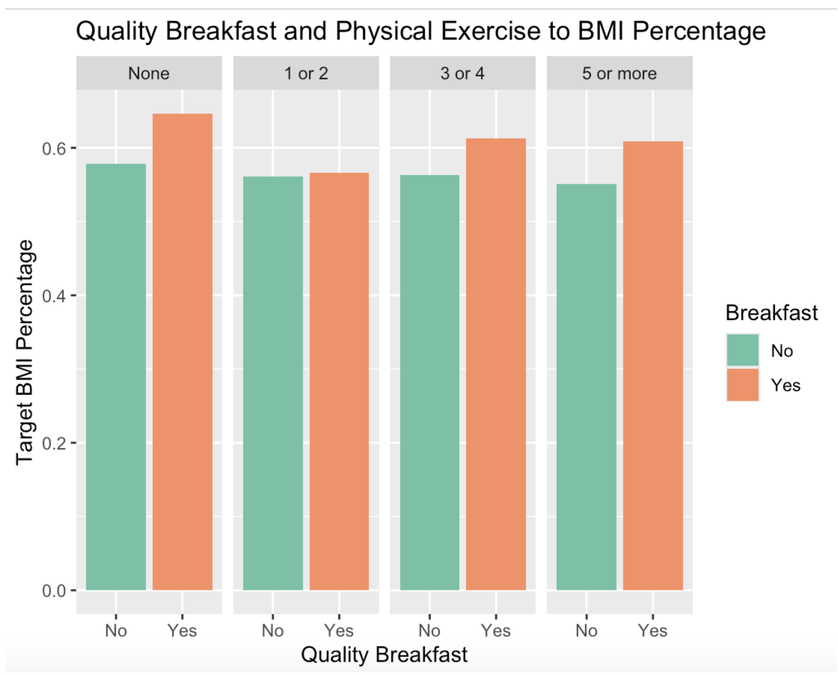
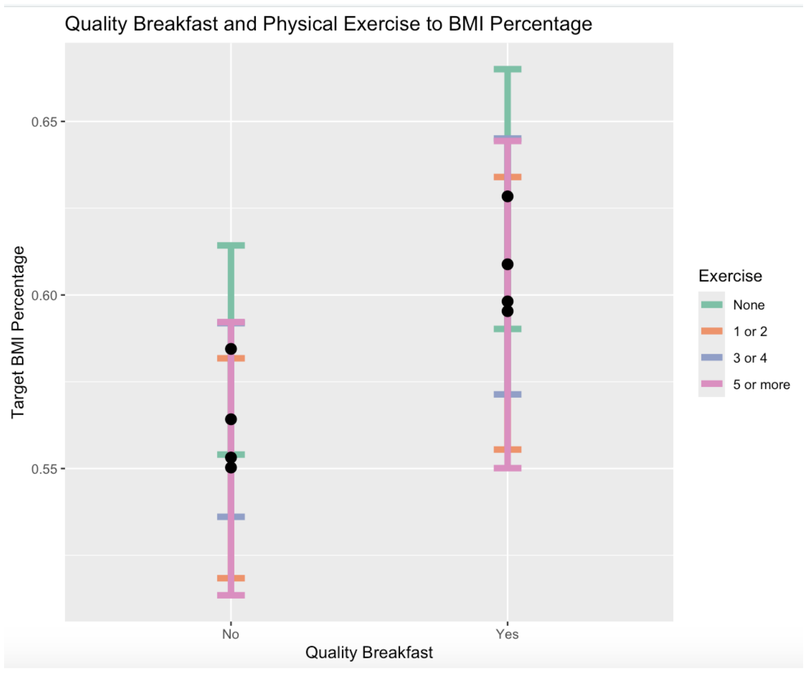


Figure 2



Discussion

- As one readily have a quality breakfast, they are more prone to report as being healthy in addition to having a BMI that falls between the target range (18.5 to 29.9).
- Future research is needed to determine if other variables (e.g. gender, household income) influences the relationship between food and/or physical exercise to BMI target.
- There could have been changes that happen between when the two datasets took place that could significantly impact one's continuation of their breakfast and exercise habits.

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