Food insecurity is a pressing issue among the college population, leading to poor diet quality and increased stress. However, research on the relationship between food insecurity and physical activity is limited. To study this relationship, an anonymous online survey was distributed through social media. The survey included questions regarding food insecurity, physical activity, and diet quality. Data were analyzed using Pearson Correlation Coefficient in SPSS Version 28.0. Food insecurity was negatively correlated with days spent doing physical activity ($r = -0.164$, $p < 0.01$). The days spent exercising was positively correlated with consuming dark leafy vegetables ($r = 0.229$, $p < 0.01$). These findings suggest that students experiencing food insecurity are less likely to participate in physical activity, and those participating in more physical activity have better diet quality. Hence, decreasing food insecurity amongst college students may promote overall health and wellbeing.

- Food insecurity is defined as the inability to consume an adequate quality or quantity of food in socially acceptable ways, or uncertainty that one will be able to do so\(^1\).
- Globally, an inadequate diet is the leading risk factor for morbidity and mortality, as it was responsible for 11 million deaths in 2017\(^1\).
- Physical activity has been shown to be an important mediator of food insecurity, physical activity, and diet quality. Data were analyzed using Pearson Correlation Coefficient in SPSS Version 28.0. Food insecurity was negatively correlated with days spent doing physical activity ($r = -0.164$, $p < 0.01$). The days spent exercising was positively correlated with consuming dark leafy vegetables ($r = 0.229$, $p < 0.01$). These findings suggest that students experiencing food insecurity are less likely to participate in physical activity, and those participating in more physical activity have better diet quality. Hence, decreasing food insecurity amongst college students may promote overall health and wellbeing.

- Adults were invited to complete an anonymous survey via social media, text messaging and email. A built-in electronic consent form explaining the study’s purpose was included.
- Data collection occurred from June 2023 to November 2023.
- The survey included demographic questions, the Food Mood Questionnaire, Food Insecurity Experience Scale, and the International Physical Activity Questionnaire.
- Data was analyzed using Pearson’s Correlation Coefficient in SPSS Version 28.0.

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### Table 1: Relationship between physical activity and food insecurity.

<table>
<thead>
<tr>
<th></th>
<th>Unable to eat healthy and nutritious foods</th>
<th>Unable to eat a variety of food</th>
<th>Unable to eat enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days spent doing vigorous physical activity</td>
<td>-0.164**</td>
<td>-0.155**</td>
<td>-0.119**</td>
</tr>
<tr>
<td>Time spent doing vigorous physical activity</td>
<td>-0.122**</td>
<td>-0.128**</td>
<td>-0.114**</td>
</tr>
<tr>
<td>Days spent exercising for at least 20 mins</td>
<td>-0.152**</td>
<td>-0.100**</td>
<td>-0.87**</td>
</tr>
</tbody>
</table>

A negative correlation is shown between food insecurity and physical activity.

### Table 2: Relationship between physical activity and diet.

<table>
<thead>
<tr>
<th></th>
<th>Whole grain products</th>
<th>Fruits</th>
<th>Nuts, excluding flaxseed</th>
<th>Dark leafy green vegetables</th>
<th>Fast foods and/or pre-made packaged foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days spent doing vigorous physical activity</td>
<td>0.168**</td>
<td>0.142**</td>
<td>0.182**</td>
<td>0.209**</td>
<td>-0.124**</td>
</tr>
<tr>
<td>Time spent doing vigorous physical activity</td>
<td>0.152**</td>
<td>0.128**</td>
<td>0.209**</td>
<td>0.177**</td>
<td>-0.113**</td>
</tr>
<tr>
<td>Days spent exercising for at least 20 mins</td>
<td>0.175**</td>
<td>0.226**</td>
<td>0.208**</td>
<td>0.229**</td>
<td>-0.104**</td>
</tr>
</tbody>
</table>

A positive correlation is shown between eating healthy and physical activity.

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- Food insecurity was negatively correlated with physical activity and healthy diet.
- Previous research has found that areas with lower food insecurity have higher rates of physical activity and better diet quality\(^2\). This aligns with the relationships found between food insecurity, physical activity, and diet.
- It has been found that food insecurity was negatively correlated with the amount of days moderate to physical activity was performed\(^2\). It was consistent with vigorous physical activity, but moderate was positively correlated with food insecurity.
- Food insecurity has been directly associated with higher BMI and poorer health, with diet quality and physical activity playing intermediate roles\(^3\).
- A higher BMI may indicate higher body fat content, which is common in individuals who are classified as food insecure since fast/pre-packaged foods are often less expensive than healthier options.
- Poor diet due to food insecurity can lead to obesity, resulting in less physical activity amongst individuals who are food insecure\(^4\). This is consistent with the negative correlations found between physical activity and food insecurity.
- Data suggests that food insecure households experience higher rates of obesity, though this phenomenon still needs to be studied\(^5\).
- This may explain the negative correlation between days spent doing physical activity and eating fast/pre-packaged foods found in this study.
- Overall, the results suggest that decreasing food insecurity may result in increased physical activity and lead to better diet quality, which in all will lead to a healthier lifestyle.

Thank you to Dr. Begdache and the rest of the BMINDS team for the constant support, guidance, and data. I would also like to thank all participants who took part in the survey making this research possible.