

CASE STUDY: THE EFFECT OF HEALTHY EATING PATTERNS ON STUDENTS' LEARNING CONCENTRATION

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Abstract

A healthy diet plays an important role in supporting students' cognitive performance and concentration in learning. This article discusses the effects of proper nutrition, such as omega-3 fatty acids, iron, B-complex vitamins, and antioxidants, on brain function, memory, and focus. These nutrients help maintain energy stability, improve focus, and reduce mental fatigue and stress that often interfere with learning. Conversely, a diet rich in sugar, processed foods, and saturated fats can have a negative impact on concentration and academic performance. Students who consume nutritious foods show improved academic performance and better mental health. Therefore, maintaining a healthy diet is essential to supporting cognitive function and achieving optimal academic performance.

Keyword : *Health, concentration, healthy eating patterns.*

INTRODUCTION

Nowadays, there are many unhealthy foods that are harmful to the body and concentration of students. A study in the UK showed that children who consume high-sugar and processed foods experience decreased concentration in class. The study found that students who consume high-sugar breakfasts tend to experience a temporary surge of energy, followed by fatigue and decreased focus. (Smith, M., & McGowan, J. 2015).

In some high schools, students who rely on fast food and junk food have difficulty following class. They report feeling tired more quickly and less able to focus on class material, which impacts their academic performance. (Duffy, LK, et al. 2016).

A survey of high school students found that those who frequently consumed processed foods and sugary drinks reported lower academic grades than those who followed a healthy diet. Students with poor diets also reported difficulty concentrating while studying. (Avena, NM, & Gold, MS 2012).

These conditions show how important a healthy diet is for students' learning ability and concentration. Changes in diet can have a significant impact on students' academic performance and mental health, so how does a good diet affect students?

DISCUSSION

A healthy diet has a huge impact on students' concentration and academic performance. Proper nutrition can support brain health, improving students' ability to learn, memory, and focus. Conversely, a poor diet, high in processed foods and low in nutrients, can negatively impact students' ability to focus and solve problems. This article will further explain how a healthy diet can improve students' concentration, as well as the essential nutrients that support brain function.

1. The Relationship between a Balanced Diet and Brain Function

A balanced diet that includes complex carbohydrates, protein, healthy fats, vitamins, and minerals is essential for supporting brain function. Complex carbohydrates, such as whole grains and brown rice, provide a slow and steady supply of glucose, which is the brain's primary source of energy. Glucose is necessary for the brain to function

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properly, especially when it comes to concentration and information processing. Studies have shown that students who eat foods with a low glycemic index, such as whole grains and vegetables, have better concentration abilities than those who frequently eat sugary or high-fat foods (Hoyland, 2009). These quality carbohydrate sources provide steady energy for the brain throughout the day, helping students stay focused during class.

2. Healthy Breakfast to Improve Concentration

Breakfast is the most important meal to start the day, especially for students who have to spend hours studying in class. A nutritious breakfast helps improve concentration and short-term memory. Students who eat breakfast regularly show better memory skills and are better able to concentrate in school compared to students who skip breakfast (Adolphus, Lawton, & Dye, 2013). A healthy breakfast should include a combination of complex carbohydrates, protein, and healthy fats. For example, whole-wheat toast with eggs and avocado, or oatmeal with fruit and nuts, can provide the nutrients your brain needs to focus throughout the day (Mahoney et al., 2005). Protein, especially from eggs and nuts, plays a key role in the production of neurotransmitters such as dopamine and serotonin, which help maintain mood and concentration (Benton & Parker, 1998).

3. Important Nutrients for Cognitive Function

Several nutrients are very important for improving students' concentration and cognitive function, including:

a. Omega-3 Fatty Acids

Omega-3 fatty acids, especially those found in fatty fish such as salmon, tuna, and mackerel, have been shown to be important for brain function. Omega-3s help increase synaptic plasticity, which plays a role in learning and memory (Calder, 2006). Children who receive omega-3 supplements show significant improvements in academic performance, especially in reading and memory (Richardson & Montgomery, 2005).

b. Iron

Iron is an essential mineral that helps transport oxygen throughout the body, including the brain. Iron deficiency, which is common in children and adolescents, can cause mental fatigue and decreased concentration. Adolescents with iron deficiency score lower on memory and concentration tests (Beard & Connor, 2003). Food sources rich in iron include red meat, spinach, and beans.

c. Vitamin B Complex

B vitamins, especially B6, B9 (folic acid), and B12, are essential for the production of neurotransmitters that regulate mood and concentration. Deficiencies in B vitamins are often associated with impaired concentration and cognitive decline (Smith et al., 2010). Foods rich in B vitamins include eggs, lean meats, green leafy vegetables, and whole grains.

d. Antioxidants

Antioxidants such as vitamin C, vitamin E, and polyphenols, which are abundant in brightly colored fruits and vegetables, protect the brain from oxidative damage. Studies have shown that regular consumption of antioxidant-rich fruits, such as blueberries and strawberries, can improve memory and concentration (Rendeiro et al., 2012).

4. The Impact of Junk Food on Student Concentration

Fast food or junk food that is rich in sugar, salt, and trans fats can have a negative impact on concentration. Research shows that high consumption of junk food is correlated with cognitive impairment, including decreased attention and concentration (Florence, Asbridge, & Veugelers, 2008). Students who frequently eat fast food have lower academic performance compared to those who eat more nutritious foods. A healthy diet plays a vital role in supporting students' cognitive performance and learning ability. Proper nutrition not only helps to improve brain function, but also supports energy stability, maintains focus, and improves memory. In the context of education, a healthy diet can be a key factor in improving students' concentration and academic performance. Here are some of the impacts of a healthy diet on students' learning concentration.

1. Improve Cognitive Function

Adequate nutritional intake, especially those containing omega-3 fatty acids, has been shown to play a role in improving cognitive function, including memory, problem-solving ability, and concentration. Omega-3 fatty acids are found in abundance in fatty fish, such as salmon and tuna, and are essential for brain development and function. Several studies have shown that regular consumption of omega-3s can improve memory capacity and concentration ability in children and adolescents (Calder, 2006). In addition to omega-3, vitamin B complex, vitamin E, and iron also play a major role in supporting mental performance. Vitamins B6, B9, and B12 help in the production of neurotransmitters that regulate mood and concentration, while vitamin E as an antioxidant protects the brain from oxidative damage that can interfere with cognitive abilities (Smith et al., 2010). Iron, on the other hand, is needed to maintain oxygen supply to the brain, and iron deficiency is often associated with mental fatigue and attention disorders (Beard & Connor, 2003).

2. Reduces Mental Fatigue

Eating healthy foods, such as fruits, vegetables, whole grains, and lean proteins, helps maintain stable blood sugar levels. This blood sugar stability is essential for maintaining consistent brain energy throughout the day. Processed foods high in sugar or saturated fats can cause a rapid spike in blood sugar, followed by a sharp drop. This energy spike often leads to mental fatigue and impaired concentration, especially midway through the study day (Florence, Asbridge, & Veugelers, 2008). Breakfasts rich in fiber and protein have been shown to provide steady energy, prevent sudden energy crashes, and improve focus during class. Breakfasts containing complex carbohydrates, such as whole-wheat bread and oatmeal, can provide a slow, sustained source of energy, helping students stay alert and focused longer (Benton & Parker, 1998).

3. Improve Focus and Concentration

Studies show that students who eat breakfast regularly tend to perform better academically than those who skip breakfast. A healthy breakfast helps keep brain energy stable throughout the day, which has a positive impact on the ability to concentrate and focus during learning (Hoyland, Dye, & Lawton, 2009). On the other hand, processed foods that are high in sugar and low in nutrients can lead to decreased cognitive performance. Excessive intake of sweet foods can increase the risk of attention deficit disorder and hyperactivity, which hinders students' ability to concentrate during the learning process (Mahoney et al., 2005). By consuming healthy foods rich in complex carbohydrates, protein, and fiber, students can maximize their ability to focus and concentrate longer.

4. Reduces Stress and Anxiety

A balanced diet also has a significant impact on mood and anxiety levels, which are closely related to concentration. Uncontrolled stress and anxiety often lead to impaired concentration and reduce students' learning abilities. Certain nutrients, such as magnesium and vitamin B, play a role in reducing stress and anxiety levels. Magnesium, found in nuts and green leafy vegetables, can help calm the nervous system and reduce stress (Smith et al., 2010). Foods rich in omega-3s have also been shown to have positive effects on mood. Studies have shown that adequate omega-3 intake can help reduce symptoms of depression and anxiety, which can improve students' ability to concentrate and focus while studying (Richardson & Montgomery, 2005). Thus, a diet rich in this essential nutrient may help students better cope with academic pressure and improve their concentration.

5. Maintaining Long-Term Brain Health

Consistent nutrient intake from healthy foods, especially during growth, is critical for long-term brain health. From early childhood through adolescence, the brain is still developing, and proper nutrition is essential to support this process. Research shows that nutrient-rich diets, such as the Mediterranean diet containing fruits, vegetables, nuts, fish, and olive oil, are correlated with better brain function and a lower risk of developing cognitive disorders later in life (Scarmeas et al., 2006). Additionally, antioxidants found in brightly colored fruits and vegetables, such as blueberries and carrots, help protect the brain from free radicals that can cause brain cell damage. These antioxidants have also been shown to improve memory capacity and concentration, allowing students to learn more effectively and absorb information better (Rendeiro et al., 2012).

CONCLUSION

A healthy diet plays a vital role in improving students' concentration in learning. Proper nutrition, including omega-3 fatty acids, iron, B-complex vitamins, and antioxidants, is essential to support cognitive function and maintain students' focus during the learning process. On the other hand, an unhealthy diet, high in sugar, saturated fats, and processed foods, can interfere with academic performance by causing mental fatigue, impaired focus, and decreased energy. By paying attention to healthy and balanced nutritional intake, students can not only improve their ability to concentrate and focus, but also maintain their brain health in the long term. Therefore, maintaining a healthy diet is very important for students to achieve optimal academic performance.

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