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College Students' Breakfast Habits and the Perception of its Health Effects

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Emily Duvick[1], Bethany Shembarger[2], Brittany Smith[3], Samuel P. Abraham[4*], Deborah Gillum[5]

[1] *Outpatient Surgery, Memorial Hospital of South Bend, Indiana, USA*

[2] *Critical Care Unit, Bronson Methodist Hospital, Kalamazoo, Michigan, USA*

[3] *Adult Medical Unit, Bronson Methodist Hospital, Kalamazoo, Michigan, USA*

[4]*Associate Professor of Nursing, Bethel College School of Nursing, Mishawaka, Indiana, USA*

[5]*Dean of Nursing, Bethel College School of Nursing, Mishawaka, Indiana, USA*

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ABSTRACT

Purpose: The purpose of this study was to explore breakfast habits and the perception of its health effects among college students. **Background:** Eating breakfast yields energy, increases concentration, and reduces obesity; however, students rarely make time for breakfast. Students miss the opportunity to enjoy better health from eating breakfast regularly. **Participants:** Participants were 116 students age 18 and older in a college situated in Northern Indiana, USA. **Method:** This is a quantitative, cross-sectional study with a descriptive design. **Results:** Perceptions did not always match with habits. Students seemed to skip breakfast even though they admit it helps with concentration. They agree that it is important to eat before a test. Time was the biggest barrier to eating breakfast in the morning. Most students preferred extra sleeping time in the morning. **Conclusion:** Most college students lack the motivation and time management skills to include breakfast into their diet, thus repudiating themselves of the opportunity to be healthier, and increase school performance. Further interventions should focus on time management and seeking to work smarter.

INTRODUCTION

Despite the numerous health benefits derived from eating breakfast, many college students do not eat breakfast regularly. Adolescents, aged 16-19, skip breakfast 55.5% of the time.[1] This pattern can be carried into the adolescents' college years. Therefore, the problem is that many college students do not eat breakfast regularly, and skipping this meal can have negative effects on the students' overall health. When people skip breakfast, they are not only missing needed energy but also the necessary nutrients.[2] The biggest barrier to students eating breakfast is a lack of time, related to busy work, school, and social schedules.[3] Skipping breakfast can be detrimental to a student's overall health. Though eating breakfast may seem insignificant to college students, it is very beneficial to their health and worth the extra time each day. The purpose of this study was to determine breakfast habits and the perception of its health effects among college students. This study was led by two research questions: (1) What are the breakfast habits and experiences of college students? (2) What do college students perceive as the health effects of eating breakfast?

BACKGROUND

Breakfast is said to be the key meal of the day because it helps improve academic performance and lowers the prevalence of obesity in children.[4] Lower Body Mass Index (BMI) levels in adults have been associated with eating breakfast on a regular basis.[4] Based on this statement and the rising rate of obesity in America, it is important that regular breakfast consumption be promoted as part of a healthy lifestyle. Increasing one's intake of vegetables, grain, and milk products during breakfast provides more sustained energy to individuals throughout the day.[4] It is especially important for college students to have stable energy throughout the day because of their involvement in classes, sports, jobs, extracurricular activities and homework.

Needed energy and nutrients are neglected whenever breakfast is not consumed.[2] This is especially true for active youth. The public health recommends cereal-based meal as part of a healthy lifestyle because it has the greatest amount of nutrients compared to other breakfast foods.[2]

Skipping breakfast in college students results in a higher BMI, lower energy throughout the day, lower blood sugar in the morning, decreased academic performance, and an increased feeling of hunger.[5] The body uses up a fair amount of sugar during the night from the

previous day's intake.[5] Eating breakfast in the morning will replenish the body's storage of sugar and kick-start the metabolism helping keep a stable BMI and blood sugar.[5] Breakfast consumption also has a positive impact on student's Grade Point Average (GPA).[5] When college students eat breakfast, their memory, and attention span are increased. This increases the likelihood that students will score a higher GPA.

Even with extensive evidence to show that eating breakfast is beneficial to one's health, there is still a lack of knowledge about the health benefits in the population of college students. One perceived barrier to eating a healthy breakfast is a lack of time in the morning.[3] Balancing work, school, and leisure schedules can be challenging for people in today's society.[3] Based on these findings in the literature, the aim of this study was to determine breakfast habits and the perception of its health effects among college students.

REVIEW OF THE LITERATURE

The articles for the literature review were mostly from Cumulative Index of Nursing and Allied Health Literature, and the EBSCOhost research databases. The articles were located using keywords such as *breakfast and nutrition, breakfast and college students, perceptions and breakfast, breakfast and weight, and skipping breakfast.* Studies were selected from peer-reviewed journals and used to create a background and basis for the study.

Breakfast and Weight Control

Students who eat breakfast more regularly experience lower BMI than students who do not eat breakfast on a regular basis.[6] Adolescents who eat breakfast more often are likely to have a lower BMI and PBF (percent body fat)than those who eat breakfast less frequently.[7] There is a decreased likelihood of obesity if children are eating more than three meals per day, which include breakfast.[4] Those who skip breakfast are likely to consume more snacks throughout the day. Without breakfast, people are hungrier throughout the day, which could result in overeating and lead to individuals becoming overweight.[4]

Nutrient and Energy Intake from Breakfast

A cereal-based breakfast was associated with the highest nutrient intake compared to all other types of food consumed at breakfast.[2] When the individuals ate breakfast, they reported they felt fuller and less hungry throughout the day.[8] When the participants skipped breakfast,

they felt hungrier and less satisfied before lunch. During their lunch, they made up for the missed energy intake by consuming extra calories. Missing breakfast increases the total amount of food eaten during the day, which in the longer term promotes weight gain.[8] Those who do not eat breakfast are likely to have lower nutrient intakes of vitamin A, fiber, thiamin, riboflavin, iron, magnesium, phosphorus, potassium, and vitamin C compared to those who eat breakfast.[9] Breakfast consumers have higher intakes of energy than people who do not eat breakfast.[9] People who consume breakfast frequently report less stress, injuries, and memory failure compared to those who do not consume breakfast.[10]

Barriers to Eating Breakfast

The most frequent barriers to eating a healthy breakfast for young adults was a lack of time, related to work, school, and social life.[3] A large number of youth report a lack of time, such as being too rushed to eat breakfast, eating on the run, and perceive that they do not have time to eat a healthy diet.[3] People who are busy have a tendency to eat on the run or do not have time to eat breakfast.

In summary, individuals who ate breakfast had better health compared to those who did not eat breakfast. Those who ate breakfast regularly had higher nutrient and energy intake, lower BMI scores, better memory, and felt less hungry throughout the day. Because of work or school, time was the biggest barrier to eating breakfast, which meant people had to either eat on the run or not eat. Those who skipped breakfast were more likely to be overweight, feel hungrier throughout the day, snack more, and consume more calories later in the day to make up for the ones they missed. Some of the studies were focused on the eating habits of children or adolescents in school, which was important because the eating habits formed early in life follow individuals through their entire lives. This research gives evidence that college-aged students are more likely to skip breakfast, which can result in negative health effects.

METHOD

The institutional review board approval was obtained before the survey administration. A survey of students using a questionnaire gave a representative sample of college students because a variety of ages, ethnicities, and academic years were analyzed. The college has a student population of about 2000, of which nearly 50% are residential students on a meal plan. A few (less than 50) commuters purchase the voluntary meal plan. All participants were

college students age18 years or older. With the permission from the food service director, the survey occurred outside the cafeteria during the lunch and dinner hours. A table was set up for students to complete the survey either before or after their meals. Students were not surveyed during the breakfast hours because this could potentially show bias to those who already eat breakfast. Instructions were given regarding the voluntary nature and confidentiality of the survey. Participants signed consent forms before completing surveys. Store-bought candy was offered as an incentive for students to participate. The data was kept anonymous by excluding the participants' names and other identifying information.

The questionnaire was created after a thorough review of the literature. To obtain face-validity, two nursing faculty members and a small convenience sample of peers reviewed the questionnaire. Needed changes were made based on feedback. The Likert-type agreement scale used for perception statements was (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree. The Likert-type frequency scale used for the experience and habit statements was (1) never, (2) rarely, (3) often and, (4)always. Of the20 statements in the survey, seven addressed perceptions, five addressed experience, and eight addressed habits.

Data analysis occurred after all surveys were completed. The frequency and percentage were calculated for the demographics and described using a table. To analyze the data, the mean was calculated for each of the 20 items, and the standard deviation for each mean. The demographic data were categorized at the nominal level of measurement, and the data for the 20 Likert-type statements were categorized at the ordinal level of measurement. The consent forms and surveys collected were safely stored and kept confidential in the College Nursing office where only nursing administrators had access, and the records would be destroyed after three years. Initial plan was to survey 120 students.

RESULTS

There were 116 surveys with all the required information. Data collection was challenging because students were either on their way to eat lunch or dinner, were in a hurry, or had to go to class. To obtain the best representation for the data analysis, the quantitative measures of percentage distribution, mean calculation, and standard deviation were used. Table 1 contains descriptive statistics of the participants' demographics. In the age range category, 98% were from 18-25 years of age, which is the traditional age for college students. Female participants constituted 65.7%. The class demographics were spread out almost evenly. The most

common ethnicity was Caucasian (87.1%), and the others were all less than 5%. Findings indicate less than one-fourth of the college students surveyed ate breakfast on a regular basis. Nearly 60% ate breakfast 4 or fewer times per week.

Table 1. Description Statistics for Participant Demographics

Variable	f	%
Age range		
18-21	85	73.3
22-25	29	25.0
26-29	1	0.86
30+	1	0.86
Class		
Freshmen	26	22.4
Sophomore	29	25.0
Junior	28	24.1
Senior	33	28.4
Gender		
Male	41	35.3
Female	75	65.7
Ethnicity		
Caucasian	101	87.1
African American	5	4.3
Hispanic	4	3.4
Mixed	4	3.4
Other	2	1.7
Number of days you eat breakfast a week		
1-2	32	27.6
3-4	36	31.0
5-6	21	18.1
7	27	23.3

Note. (N = 116).

Students' Perception on the Health Effects of Eating Breakfast

The survey statements were split up into three sections, and seven of these statements were about the students' perceptions regarding breakfast. These perception statements focused on the health effects of eating a healthy breakfast, the importance of eating breakfast before a test, nutrients from breakfast, a balanced diet for breakfast, breakfast being the most important meal of the day, the weight of breakfast eaters, and the attitudes of breakfast eaters. The students rated these items on a 4-point Likert-type scale of agreement *(1-Strongly Disagree)* to *(4-Strongly Agree).*

Table 2 has the Mean (M) levels of agreement for each of the seven perception statements and their associated Standard Deviation (SD). All the statements had calculated means greater than two, which was above the midpoint of the 4-point scale. This indicated the participants tended to agree with the statements. The statement that was most agreed with was, "Eating breakfast has a positive impact on my health" (M=3.38, SD=0.64). The statement with the second highest mean was "It is important to eat breakfast before I take a test" (M=3.37, SD=0.72).

Contrary to what was anticipated, the statement "Breakfast is the most important meal of the day" (M=3.08, SD=0.62) had only a moderate level of agreement. The statement participants agreed with the least was "Breakfast eaters tend to weigh less than breakfast skippers" (M=2.77, SD=0.69). In addition, participants had lower levels of agreement with the statement "Breakfast eaters tend to cooperate and get along better with classmates" (M=2.92, SD=0.61).

Table 2. College Students' Perception on the Health Effects of Eating Breakfast

Perception Statements	Mean	Standard Deviation
Eating breakfast has a positive impact on my health.	3.38	0.64
It is very important to eat breakfast before I take a test.	3.37	0.72
The nutrients I receive at breakfast help me stay healthy.	3.18	0.58
A balanced diet such as a carbohydrate, protein, and fat needs to be included for breakfast.	3.16	0.45
Breakfast is the most important meal of the day.	3.08	0.62
Breakfast eaters tend to cooperate and get along better with classmates.	2.92	0.61
Breakfast eaters tend to weigh less than breakfast skippers.	2.77	0.69

Note. (N=116). Items were rated on a 4-point Likert-type scale ranging from 1 (*Strongly Disagree)* to 4 (*Strongly Agree)*, so higher means indicate a higher level of agreement.

Based on the results, the participants felt that most of the perception statements were true because the mean scores were all above the midpoint. Yet, participants felt the strongest about breakfast having a positive impact on their health. They also felt strongly about the

importance of eating breakfast before taking a test. Participants did agree that the nutrients received at breakfast help them stay healthy. The participants did not feel strongly about breakfast eaters tending to cooperate and get along with classmates better or that they tended to weigh less than breakfast skippers. This indicated that participates understood the positive impact of breakfast on their health. Yet, the lower means of these statements demonstrated that students did not agree as strongly that the consumption of breakfast helps individuals stay at a healthy weight and promotes better interactions with their peers.

Students' Experience of Eating Breakfast

Table 3 contains the section on students' experience and habits about eating breakfast. All of these statements were above the midpoint of the mean, which indicated that the majority of participants had some level of consensus. The participants rated these statements on a 4-point Likert-type scale of frequency *(1-Never)* to *(4-Always).*

The experience statements, the mean, and the corresponding standard deviations are listed in the first part of Table 3. The statement most agreed with was "When I eat breakfast, I feel more energized throughout the day" (M=3.30, SD=0.68). The next highest mean was associated with the statement "When I skip breakfast, it's because I do not have enough time to eat breakfast" (M=3.28, SD=0.78). The third highest mean in the experience category was associated with the statement "When I eat breakfast, it provides me with more strength and endurance to engage in physical activity" (M=3.19, SD=0.64). The participants had a moderate level of consensus that whenever they skipped breakfast, was hard for them to concentrate in class and they felt stressed throughout the day.

Students' Habits of Eating Breakfast

The statement with the highest consensus in the habits section was "Fruit is included in my breakfast" (M=2.80, SD=0.68). This is a healthy habit; however, the majority of students did not eat breakfast regularly. A moderate level of consensus was reached for the statements, "When I eat breakfast, it's something I can eat on the go" (M=2.75, SD=0.79), and "I'd rather sleep in than wake up earlier to eat breakfast" (M=2.77, SD=0.92).

These findings indicate the students are either tired, lacks time, or has an insufficient sleep, which is making them want to sleep longer rather even if they have to skip breakfast. Most of those who ate breakfast did so while traveling to their next destination. Including eggs, meat,

and other proteins in breakfast were given less importance than catching up on lost sleep. The statement with the least consensus was "Milk is included in my breakfast" (M=2.24, SD=0.96). The second lowest mean was associated with the statement "I am a role model regarding eating a healthy breakfast" (M=2.25, SD=0.78), which was not surprising because the majority of the participants ate breakfast fewer than four times per week.

Table 3. What are the breakfast eating experiences and habits of college students?

Experiences	Mean	Standard Deviation
When I eat breakfast, I feel more energized throughout the day.	3.30	0.68
When I skip breakfast, it is because I do not have enough time to eat breakfast.	3.28	0.78
When I eat breakfast, it provides me with more strength and endurance to engage in physical activity.	3.19	0.64
When I skip breakfast, it is hard for me to concentrate in class	2.73	0.87
If I skip breakfast, I feel more stressed throughout the day.	2.58	0.83
Habits		
Fruit is included in my breakfast.	2.80	0.68
I'd rather sleep in than wake up earlier to eat breakfast.	2.77	0.92
When I eat breakfast, it's something I can eat on the go.	2.75	0.79
Eggs, meat, or other protein is included in my breakfast.	2.67	0.80
When I eat breakfast, I snack less throughout the day.	2.63	0.79
Cereal is included in my breakfast.	2.47	0.74
I am a role model regarding eating a healthy breakfast.	2.25	0.78
Milk is included in my breakfast.	2.24	0.96

(Note). N=116. Items were rated on a 4-point Likert-type scale of frequency ranging from 1 *(Never)* to 4 *(Always).*

SUMMARY OF RESULTS

Based on these results, most participants expect to be more energized throughout the day and will have more strength and endurance to engage in physical activity when they eat breakfast. The results also indicated that participants skip breakfast mainly because they do not have enough time to eat. The most popular food that participants ate for breakfast was fruit, and the least popular breakfast items were cereal and milk. Fewer participants believed that they are role models regarding eating a healthy breakfast. This indicated a discrepancy between participants' perceptions and actions. Many participants agreed that eating breakfast results in a healthy lifestyle, yet they do not make time for breakfast in the morning.

The college students perceive breakfast to affect their health positively. These health benefits include being more energized and having the strength and endurance to engage in physical activity. Participants agreed that eating breakfast before taking a test is important and that eating breakfast is important to stay healthy. Despite these results, many college student participants did not see themselves as role models for eating breakfast and indicated that time was their biggest barrier to eating breakfast.

DISCUSSION

Of the perceptions section of the survey, most of the participants agreed with each statement, as indicated by means ranging from 2.77 to 3.38. These results indicated that most of the surveyed college students agreed that breakfast positively affected their health, attitude, weight, and academic performance. This consensus was an indicator of agreement with the findings of several studies in the literature review.[1-5,8,9] The second part of the survey referred to the experiences and habits of college students concerning eating breakfast. The current study yielded similar results as the literature findings.[2,4,5,8,9]

Participants had a strong consensus that breakfast made them feel more energized throughout their day, indicated by a mean of 3.30. It was anticipated that this statement would have a high level of consensus as confirmed by research studies.[1,3] Closely beneath this mean at 3.28 was the statement, "When I skip breakfast, it's because I do not have enough time to eat breakfast." The large means of these two statements, in addition to 58.6% of the surveyed students that stated to have eaten breakfast ≤ 4 times per week, revealed a discrepancy between the perceptions and actions of college students. This discrepancy highlighted time as a primary barrier to the act of eating breakfast. The literature indicated time as a major factor

in skipping breakfast.[3]This statement applied to college students, reflective of the time barrier that often impedes the consumption of a daily breakfast by a significant percentage of college students.

The participants viewed the perception statement, "Breakfast has a positive impact on my health" (M=3.38, SD=0.64) as the most agreed with the statement in the perception category. Anthracopoulos *et al*[4] explained one positive health benefit of breakfast by stating lower BMI levels in adults has been linked with eating breakfast on a regular basis. Participants in this study also thought it was important to eat breakfast before taking a test (M=3.37, SD=0.72), which correlated to past research. Long[5] indicated how breakfast consumption had a positive impact on a college student's GPA.Long[5] had also warned that skipping breakfast in college students resulted in a higher BMI, lower energy throughout the day, lower blood sugar in the morning, decreased academic performance, and an increased feeling of hunger.

The participants agreed that eating breakfast helped them stay energized throughout the day, and it also provided them with endurance and strength to do physical activity. Gibson and Gunn[2] stated that when people skipped breakfast, they missed out on needed energy, and necessary nutrients. The body uses up a fair amount of sugar during the night from the previous day's intake, and eating breakfast is a way to replenish the body's storage of sugar and sustain energy throughout the day.[5] These finding of student experiences correspond with research findings,[4,10] indicating the seriousness of the existing problem of skipping breakfast. Including cereal with breakfast was encouraged in the study by Gibson and Gunn[2] because of its nutrients; however, the participants in the current study had a lower consensus for including cereal in their diet. The reason could be that cereal is a sit-down meal usually with milk and not an "eat on the go" type of fruit, fries, candy bar, doughnut, or sandwich.

LIMITATIONS

The survey occurred outside the dining area, and the students were either on their way to eat or going back to class after eating; therefore, one limitation was that participants were usually in a hurry and may not have had sufficient time to fill out the survey. The participants were mostly Caucasian (87%) which is a limitation. The small sample size of 116 is a limitation. As a private Christian college, the diversity of students compared to larger public colleges probably limits the generalizability of the findings. This survey questionnaire has not been used in previous studies.

IMPLICATIONS

Breakfast is a meal that everyone should be encouraged to eat daily. The participants and the literature indicated that breakfast had a positive impact on their health, such as providing them with more energy throughout the day. Yet, the majority of college students did not eat breakfast frequently, even though they perceived breakfast as being beneficial to their health. This indicates the need for focus on time management and working smart to ensure positive health benefits by making the time for a daily breakfast. Educating and assisting individuals with an action plan are tangible ways that professionals can positively influence people to adopt better breakfast eating habits. This may lead to better health outcomes.

CONCLUSIONS

Eating breakfast has many positive health effects, such as lower BMIs, higher nutrient and energy intake, less feelings of hunger before lunch, less snacking, and better academic performances. The perceptions and actions of college students matched some of the information from the literature review. Participants agreed that breakfast has a positive impact on their health, is important to eat before taking a test, gives them more energy throughout the day, and provides them with endurance and strength to participate in physical activity. Yet, many participants did not eat breakfast on a consistent basis and did not consider they were role models to eating a healthy breakfast. Many participants also agreed that adequate time was the biggest barrier to eating breakfast in the morning.

The first area of education should include information stating that daily breakfast consumption is a way to have a lower, healthier BMI. Eating breakfast in the morning helps people snack less throughout the day and feel less hungry for lunch. This can help decrease overeating throughout the day, thus improving health by having a lower BMI. Obesity is a huge problem in America right now, and losing weight can be very difficult for individuals. Yet, if education regarding the value of a daily, healthy breakfast is provided, then people can have a healthy way to lose weight and lower their BMIs.

The second area of education is related to decreasing the barriers to eating breakfast. The biggest barrier found in the literature review and also in this study was a lack of time in the morning. Students in this study knew that breakfast was beneficial to their health, yet because they did not have time, they did not eat breakfast. Ways to decrease this barrier include waking up earlier, preparing breakfast the night before, or eating breakfast on-the-go. Taking

a few extra minutes in the morning to eat a healthy breakfast can alter one's lifestyle, promoting positive health benefits.

RECOMMENDATIONS

The first recommendation for future research is to have more participants complete the survey. Having a larger sample size may increase the validity of the survey. This may also help obtain a wider range of perceptions about breakfast from a larger group of participants. The second recommendation is to sample a wider range of participants outside of college's campus. Having participants that vary in age and location will add additional perceptions about breakfast. Comparing adolescents' perceptions of breakfast to older adults' perceptions of breakfast would also be suggested to determine perceptions across the lifespan. A third recommendation is to survey in places where people do not already eat to decrease this bias. Surveying during lunch and dinner decreased bias for this study, yet the location of data collection may have unknowingly attracted participants who regularly eat breakfast.

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