


**Factors Influencing Breakfast Consumption
Among Middle and High School Students**

by

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ABSTRACT

Breakfast has long been known as the most important meal of the day, yet students tend to skip this meal more often than others. The objectives of this study were to determine the number of students who do not eat breakfast, why they choose not to eat breakfast, and what behaviors they notice if they choose not to eat breakfast. The overall goal is to have a better sense of breakfast patterns among middle school and high school students and to better educate them on health and well being in regards to breakfast consumption.

Previous studies in Wisconsin have found that 25 percent of middle school students, and 30 percent of high school students in Wisconsin started their school day without breakfast. In this study 258 students from Augusta Middle and High School in Augusta, Wisconsin were asked to respond to a ten-item assessment on breakfast habits. The assessment results indicated that 36% of the participants eat breakfast everyday, with 26% eating breakfast fewer than three days per week. Augusta students identified that they most often consume breakfast at home or

during our school's breakfast break. The most common reason for not eating breakfast was cited as not being hungry or not having enough time. Students identified no difference in their behavior when they did not eat breakfast, with feeling tired or getting hungry or a stomachache as secondary behaviors. These findings are similar to findings from the 1998 survey done by Wisconsin Good Breakfast for Good Learning Campaign (Wisconsin Department of Public Instruction, 1998).

The findings in this study are important for educators and food service coordinators involved in schools to help educate students on the importance of eating a nutritious, well-balanced breakfast. This data also helps in planning of meals for our school breakfast program, and the importance of offering a breakfast program to our students.

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Chapter I: Introduction

Students need to be fueled up in order to reach their highest potential during their school day. Breakfast has been long known as the most important meal of the day, a way of boosting the energy levels to start the day. One way to ensure students will perform well in their school day race is for them to eat a well-balanced and nutritious breakfast.

Eating breakfast helps students perform to their full potential. As we sleep our energy reserves are depleted and our body needs to refuel (Van Wees, 2006). The American Dietetic Association finds that breakfast is important to everyone's overall health and performance (Ohr, 2005). Children in particular require nutrients for not only energy, but also growth and maintenance of body functions. One-fourth of the nutrients children need should be eaten during breakfast (Samuel, 2002). Children who eat breakfast are more likely to meet daily nutrient recommendations for calcium, iron, zinc, riboflavin, and vitamins A and C (UW-Extension, 2005). People who are regular breakfast eaters have a better overall nutrient intake as compared to those who skip breakfast (Ohr, 2005).

The 5 Star Child Nutrition Task Force defines a nutritious breakfast as one consists of a balance of starch, protein, fat and sugar. This study found that having a well balanced, nutritious breakfast helps sustain the release of energy compared to a breakfast of mainly sugary foods. Breakfasts that include whole grains that are high in fiber, along with fruits and dairy products can also provide balanced nutrition (Rampersaud, 2005). Whole grain foods that are high in fiber create a full feeling and are released at a slower rate, therefore creating longer lasting energy (VanWees, 2006). Many breakfast cereals are now fortified with nutrients and when eaten with milk and fruit can be a great start to the day.

Breakfast has been shown to affect the ability to learn, specifically in relation to the cognitive functions of memory and attention span (Ohr, 2005). Consuming breakfast also accounts for lower levels of tardiness and absenteeism and fewer problems. In 1994 Congress set a National Education goal that “by the year 2000, all children will start school ready to learn”. According to the goal, we cannot expect children to learn if they come to school hungry or poorly nourished. Government officials placed that responsibility on families, schools, and communities to ensure children's readiness for school (North Central Regional Education Library, 1993). For a student to be at their most optimum learning capability, they should start their day with breakfast.

Breakfast eaters also tend to make wiser choices throughout the day in regards to lower fat foods because breakfast consumption helps sustain the full feeling and leads to less ravenous feelings of hunger (Rampersaud, 2005). Ironically, people who are trying to control their weight will often skip breakfast as a means of calorie control. People who are successful at losing and keeping weight off are breakfast eaters (Ohr, 2005). Even though breakfast consumers eat more calories in their day, they are less likely to be overweight because they tend to make wiser choices throughout their day (Rampersaud, 2005).

So with all the facts about how important breakfast is to school performance, why are students still choosing to not eat breakfast? Common reasons for skipping breakfast according to the 5 Star Child Nutrition Task Force (1999) include oversleeping, lack of time, or just not being hungry. When children come to school hungry they are less attentive in class, are less well behaved and absent and tardy more frequently. Symptoms such as stomachaches, headaches, irritability and difficulty concentrating were also noted by the 5 Star Child Nutrition Task Force study.

According to the Center for Disease Control (2006), the percent of young people who eat breakfast decreases with age. Their study showed that 92% of children ages 6-11 ate breakfast while only 75-78% of adolescents ages 12-19 ate breakfast. The Wisconsin Youth Risk Behavior Survey (2005) found that 14% of students reported not eating breakfast at all in the last seven days and 58% of students going two or more days without eating breakfast. Similar findings of 12% of students reporting skipping breakfast were found by the United States Department of Agriculture (Devaney, 1998).

People who skip breakfast are more likely to skip other meals. In particular females skip meals more frequently than males. An Australian study by Mary Shaw (1998) found that meal skippers are more likely to be dissatisfied with the body shape and to be on a diet or trying to lose weight. Shaw also found that skippers are more likely to eat high fat snacks and to have higher cholesterol due to their food choices later in the day. This finding is supported by research done by Rampersaud (2005) who states that children who skip breakfast do not make up the nutrients at other meals during the day. Further research by Shaw found that teenage females, children from families with low levels of education and older children in general were more likely to skip breakfast (Shaw, 1998).

With the findings that not all students are eating at home, more specifically middle school and high school students, the United States Department of Agriculture piloted a school breakfast program. This program was made into permanent in 1975, meaning that funding was available to schools that chose to pursue it. According to the Wisconsin Extension program, 58% of schools participated in the breakfast program in the 2005-2006 school year. Schools tend to offer a breakfast program if a majority of their students fall below the poverty level and are eligible for free or reduced meals. School breakfast programs must meet current dietary

guidelines by offering foods containing no more than 30% of calories from fat, a serving of milk, fruit or fruit juice and grain or meat. Overall school breakfast should meet one fourth of a child's daily requirements for calories, protein, calcium, iron, and vitamins A and C (UW-Extension, 2005).

Several resources are available to help educators teach students how to have overall health and well-being. The Dietary Guidelines for Americans and Food Guide Pyramid were updated in 2005 to help people better understand their nutritional needs. A user friendly website with many kid friendly activities has been created. This site also allows you to track your food intake and get a nutrient analysis. As educators get more familiar with resources that are available to them, students will benefit.

So why should our students eat breakfast at home or at school? Overall benefits identified by the 5 Star Child Nutrition Task Force include a better overall performance in class, more alertness, fewer complaints of headaches and stomachaches, less absenteeism and tardiness, and higher test scores. The benefits of breakfast are obvious and educators need to be aware of the consequences of no breakfast consumption by students. By understanding the breakfast consumption habits of middle and high school students educators will be better able to provide education and knowledge about the importance of breakfast. Promoting healthy breakfast habits in our youth will set a pattern for success.

Statement of the Problem

The purpose of this study is to examine the factors that influence Augusta middle and high school students' breakfast consumption. As an educator in the school district, the researcher has observed that students are either skipping breakfast or are making poor breakfast food choices. School success breakfast consumption has been correlated to academic performance. A

problem exists when a school offers a school breakfast program, yet students still choose not to eat. Findings will help Family and Consumer Education and Health Education teachers in their pursuit of teaching nutrition education. Findings of this study will also help the school's health and wellness policy team to formulate new goals specific to our school breakfast program. My hypothesis is that middle school students eat breakfast more frequently than high school students and that as students get older they are more likely to skip breakfast.

Purpose of the Study

The objectives in this study were to a) identify the percent of Augusta middle school and high school students who are skipping breakfast; b) determine where students are most frequently eating breakfast; c) discover why students are skipping breakfast and d) identify student perceptions of what behaviors they note as a consequence of not eating breakfast. Findings will be used to help students become aware of their nutritional needs.

Assumptions and Limitation of the Study

1. When students completed the breakfast assessment the researcher assumes that honest answers were given.
2. It is assumed that answers were not biased based on wanting to please the researcher.
3. It is assumed that results will be published for school staff, parents and students to read and learn about the importance of eating breakfast.
4. Results represent a single school and may not correlate to other schools.
5. The assessment asked students what they had for breakfast that morning. This may not represent what they typically eat each morning.

Definition of Terms

Dietary Fiber. Dietary fiber is found in fruits, vegetables, and grains. It is an important part of a healthy diet. Dietary fiber adds bulk to your diet. Because it makes you feel full faster, it can be helpful in controlling weight. Fiber aids digestion and helps prevent constipation. The recommendation for older children, adolescents and adults is 20 - 35 grams per day. To ensure adequate fiber intake, eat a variety of foods, including more fruits, vegetables, whole grains, cereals, and dried beans and peas. Water aids the passage of fiber through the digestive system. (Medline, 2008)

Whole Grains. Whole grains are cereal grains that retain the bran and germ as well as the endosperm, in contrast to refined grains, which retain only the endosperm. Whole-meal products are made from whole-grain flour. Common whole-grain products include oatmeal, popcorn, brown rice, whole-wheat flour, and whole-wheat bread. Common refined-grain products include white rice, white bread, hominy, and pasta (although whole-grain varieties of pasta are available). (Wikipedia, 2008)

Chapter II: Literature Review

The intent of this research study is to identify the percent of Augusta middle school and high school students who are skipping breakfast; to determine where students are most frequently eating breakfast; to discover why students are skipping breakfast and what behaviors the students note as a consequence. Findings will be used by school staff to help students become more aware of their nutritional needs. This chapter will include a review of literature in regards to the benefits of eating a well-balanced and healthy breakfast, reasons students choose not to eat breakfast, and school breakfast and nutrition education programs available for educators to teach students about their choices.

Benefits of Eating a Nutritionally Well-Balanced Breakfast

In the morning, after going eight to twelve hours without food, the body is in need of re-fueling. We get that energy through the nutrients found in foods that are eaten. Consuming a breakfast that consists of a variety of foods including whole grains, fruits and low fat proteins such as dairy products will positively affect school performance (Rampersuad, 2005).

The average person should consume at least six servings of grain products daily. According to the 2005 Dietary Guidelines for Americans, Americans should consume three or more servings of whole grains each day. Whole grains provide the body with dietary fiber, antioxidants, vitamins and minerals and have been shown to reduce the incidence of some forms of cancer, digestive system diseases, gum disease, coronary heart disease, diabetes, and obesity. Some of these protective effects occur because carbohydrates from whole grains are digested and enter the bloodstream more slowly. (Wikipedia, 2008) Many grains are not whole grain, but the whole grain trend is increasing. To identify if a product as whole grain, look at the first ingredient on the label. If the label says enriched then it means nutrients have been taken out and

then other nutrients have been added. Whole grains contain vitamins, minerals, antioxidants, fiber and protein, which are important protective factors against cancer, cardiovascular disease, diabetics and obesity (Ohr, 2005). Breakfast cereals are now promoting whole grains on their packages. For instance, General Mills announced in September of 2004 that they would make all of their Big G cereals with whole grains (Ohr, 2005). Typically whole grain food products have higher levels of dietary fiber. The amount of dietary fiber in a food can be found on the Nutrition Facts Label, under carbohydrates, on the package of food product. It is recommended that at least 20 grams of dietary fiber should be consumed each day, with this level increasing as you age (Iowa Extension, 2006).

The United States Department of Agriculture, website mypyramid.gov (2007), states that fruits are also considered an integral part of a morning breakfast routine. Fruits are naturally low in fat, sodium, and calories. Fruits are also an important source of many nutrients, including potassium, dietary fiber, vitamins A and C, and folic acid. These vitamins and minerals are important for health and maintenance of the body. Diets rich in potassium help to maintain a healthy blood pressure. Folic acid may reduce a woman's risk of having a child with a brain or spinal cord defect. Vitamin A keeps eyes and skin healthy and helps protect against infections. Vitamin C helps heal cuts and wounds and keeps teeth and gums healthy. (Produce for Better Health Foundation, 2008). The 2005 Dietary Guidelines for Americans recommended that two cups of fruit be consumed each day and that choosing a variety of fruits each day reduces the risk of some chronic diseases.

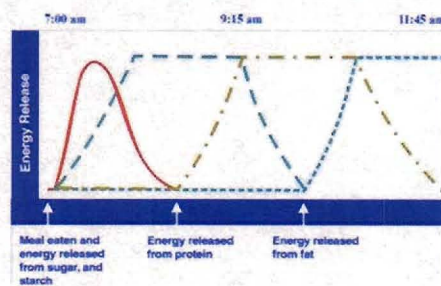
Low fat proteins have been found to be the last important link in breakfast consumption benefits. Milk products in particular are important to bone health during adolescence. The 2005 Dietary Guidelines for Americans recommend consuming 3 cups of fat free or low fat milk

products per day. The United States Department of Health and Human Services makes several suggestions in relation to milk and milk product consumption. Studies showed a positive relationship between the intake of milk and milk products and bone mineral content or density. Milk and milk products should not be avoided because of concerns that these foods lead to weight gain. There are many fat-free and low-fat choices available. Another important breakfast protein is the incredible, edible egg. Eggs can be cooked in a variety of ways; scrambled, over easy, fried, or in an egg sandwich. According to the American Egg Board, eggs provide the highest quality of protein. Protein provides the building block youth need to grow and the energy they need to stay focused throughout the day.

The 5 Star Nutrition Task Force (1999) examined the effects of various breakfast items on overall energy release and found a balanced meal provides an individual with higher sustained and longer lasting energy level than just eating proteins, fats, starches or sugars separately. Sugars are found to have an immediate energy boost but drops dramatically in a short amount of time. Proteins take a little longer to provide energy, but that energy lasts a little longer before it drops. Fats take the longest to provide energy. A balanced breakfast includes all energy giving foods and therefore provides an overall long lasting energy to get students to the lunch hour.

Figure 1:

Energy Release of a Balanced Breakfast



Source: 5 Star Child Nutrition Task Force

Rampersaud (2005) found that the breakfast eating habits and patterns of parents has a significant impact on adolescent breakfast eating. Other factors include frequency of family sit down meals and healthy food choice availability in the home. If a school does not offer a school breakfast program it is important that parents provide a well-balanced, healthy breakfast at home. The Food Research and Action Center (2007) noted that children who ate breakfast reported that they had increased energy and a greater ability to pay attention in school. The chart below summarizes the Food Research and Action Center (2007) support for breakfast and sums up the benefits of eating breakfast for learning:

Table 1

Eating breakfast at school helps children perform better

- * Children who eat a complete breakfast, versus a partial one, make fewer mistakes and work faster in math and number checking tests.
 - * Children who eat breakfast at school – closer to class and test-taking time – perform better on standardized tests than those who skip breakfast or eat breakfast at home.
 - * Providing breakfast to mildly undernourished students at school improves their memory in cognitive tests.
 - * Children who eat breakfast show improved cognitive function, attention and memory.
 - * Participating in school breakfast is associated with improved math grades, attendance and punctuality.
 - * Children perform better on tests of vocabulary and matching figures after eating breakfast.
 - * Consuming breakfast improves children's performance on demanding mental tasks and reaction to frustration.
-

Breakfast improves the quality of children's diets, enhances academic performance, improves student behavior and improves the learning environment (UW Extension, 2005). A well-balanced and nutritious breakfast has even more benefits.

Reasons Teens are not Eating Breakfast

Students are starting their days without the benefits of breakfast. Reasons for not eating breakfast include lack of time in the morning or not being hungry (Shaw, 1998). The 5 Star Child Nutrition Task Force (1999) added oversleeping, socializing or involvement in school related activities before school, and no breakfast program offered at school. Student eating patterns and behaviors are also influenced by peers and parents, the food that is available to them, overall food preferences, the cost and convenience of foods, personal and cultural beliefs, and mass media and body image (Stang, 2005).

Breakfast consumption by adolescents in the United States has declined over time. The United States Department of Agriculture (Devaney, 1998) found that 12% of students skipped breakfast and that only 11% ate a breakfast that contained foods from three of the food groups. This study also noted that the likelihood of eating breakfast declined as the children age. Stang and Story (2005) found similar findings. In teens girls aged 14-18, 34% skipped breakfast compared to 15% of girls aged nine to 13. In teen boys aged 14-18, 28% skipped breakfast compared to 15% of boys aged nine to 13.

Adolescents who perceive their body weight as being too high or who are concerned about their weight are more likely to skip breakfast (Rampersaud, 2005). Studies show that almost 75% of teen females consider themselves overweight and wish to lose weight (Story, 2000). However only 22% of those teen females actually fall into the defined term of being overweight. Almost 20% of girls that participated in the study had gone without eating for 24

hours or more in an attempt to lose weight. Berlin (2002) indicated that some teens say they skip breakfast in an attempt to lower calories in an attempt to lose weight. To many young females this may seem like a good approach, but in reality it doesn't work.

In 1965 teen female breakfast consumption was at 84%, but in 1991 it was 65% (Haines, 2005). Part of the decline could be blamed on the preoccupation with body size and shape that is common among adolescent students, especially females. Societal pressures are often more of an influence on females than on males. (Zullig, 2006) This leads to a higher level of distorted body image and more unrealistic weight goals. Teen females who reported inappropriate diet behaviors and negative weight perceptions were three times more likely to have skipped breakfast than their peers. Consistent meal skipping by teens identifies those in need of nutrition education.

Teens who don't eat breakfast are more likely to eat foods higher in calories later in the day. Research by Rampersad (2005) found that teens not only have increased calorie intake later in the day, but that those calories tend to come from high fat snacks. Snacking by teens is in part due to the ravenous hunger that the teens are feeling from not consuming breakfast. Snacks have been found to make up one-fourth to one-third of teen food consumption for energy (Story, 2000). Snack choices by teens tend to be high in sugar, sodium and fat and low in vitamins and minerals (Stang, 2005). Soft drinks were noted as a common snack among adolescent females, accounting for 6% of their daily caloric intake (Haines, 2005). Teens are drinking more soda and coffee and less nutrient valued beverages like milk and juice, especially for breakfast. McKenna (2007) surveys conducted in both the 1977-1978 and 2001-2002 school years show consumption of milk decreased by almost half. On the other hand, soda consumption almost doubled. Teens noted that an increased energy from caffeine as a common reason for having soda for breakfast.

In focus groups conducted by Stang and Story (2005) teens cited key themes in relation to their eating habits. Lack of time, the inconvenience of eating healthy, lack of self-discipline and lack of a sense of urgency were noted by teens. Other factors influences food choices and eating behaviors included taste, hunger, convenience, availability, and parent and cultural influences. Overall teens noted that healthy eating was not a main focus or concern of theirs. Teens are primarily focused on the here and now and have little concern for their future health.

Missing breakfast has well documented impairments on children's learning. Students who don't eat breakfast tend to have behaviors that will be a detriment to the classroom setting. The Food Research and Action Center (2007) found the following data about hungry children:

Table 2:

Missing Breakfast and Experiencing Hunger Impairs Children's Ability to Learn

- * Children who skip breakfast are less able to distinguish among similar images, show increased errors, and have slower memory recall.
 - * Children experiencing hunger have lower math scores and are more likely to repeat a grade.
 - * Behavioral, emotional and academic problems are more prevalent among hungry.
 - * Children experiencing hunger are more likely to be hyperactive, absent and tardy, in addition to having behavioral and attention problems more often than other children.
 - * Children who are undernourished score lower on cognitive tests when they miss breakfast.
 - * Teens experiencing hunger are more likely to have been suspended from school, have difficulty getting along with other children, and have no friends.
-

Many students may not be taking full advantage of breakfast programs offered in school due in part to their unhealthy preoccupations with weight and their weight loss efforts (Zullig,

2006). Skipping breakfast could be decreased by teaching the importance of eating breakfast, as well as building self-esteem and informing students of proper weight management techniques (Shaw, 1998).

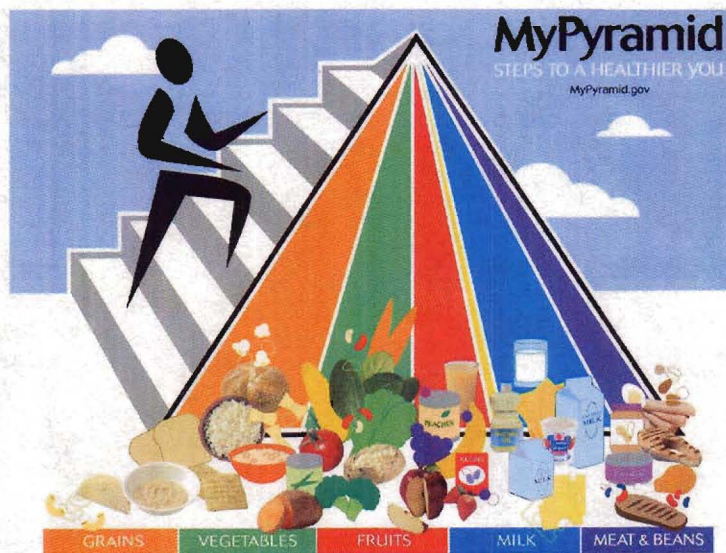
School Breakfast and Nutrition Education Programs

Research shows that good programs can improve nutrition, which in turn will support academic performance (McKenna, 2007). Nutrition education should focus on the key topics of nutrition and health, the food supply and influences on choosing foods, dietary principles, and appreciations of health foods. In 2004 over 50% of schools included multiple nutrition topics in a required health education course (McKenna, 2007). However, fewer than 50% of lead teachers receive recent training or the latest research regarding nutrition and physical activity. Several resources are available to help educate teens on the importance of breakfast including the United States Department of Agriculture website mypyramid.gov, the 2005 Dietary Guidelines for Americans, and school breakfast program materials.

The Food Guide Pyramid was created to help Americans better choose healthful foods. The pyramid has gone through many transformations starting out as the basic seven food groups, next the basic four food groups and the current pyramid shape of foods suggested (www.mypyramid.gov). In 2005 the pyramid design was modified to better demonstrate how much of each food group people should consume. According to this model, most of our daily diet should consist of grains, then vegetables and fruits, milk and then proteins or meats. Fats, oils and sweets should be a very small part of the daily diet. The New Food Guide Pyramid does not give exact serving sizes for all people in one generalized amount, it instead encourages you to custom design your own results. The new pyramid also adds the importance of exercise to overall health.

Figure 2:

The 2005 Food Guide Pyramid



Source: United States Department of Agriculture, 2007

The New Food Guide Pyramid encourages you to make your own pyramid plan based on age, gender, weight, height and activity level (www.mypyramid.gov). Your personal pyramid plan includes the specific amount of each food group should be consumed as well as tips for overall health. You can also track and enter the foods you consumed in a 24-hour period of time and enter them for analysis. The pyramid tracker analyzes the nutrients that are consumed for where there are deficiencies and overages. The website is a useful tool for educators and for teens to learn more about healthful behaviors. Staff should be introduced to the site and use it themselves in order to better help students use the resource.

Most adolescents eat fewer servings of the major food groups than the Food Guide Pyramid recommends for them (Stang, 2005). Less than 5% of youth consumed the minimum required number of servings specified for them. Further analysis identified none of the girls in Stang's research and only 2% of boys aged 9-13 and 5% of boys aged 14-18 met the

recommendations. Both males and females met the grain requirements, however very little of those grains were whole grains. In the fruit group, both males and females were below the recommended levels. Dairy product consumption is low, especially among females. This data shows a need for American youth to improve their diets.

The Dietary Guidelines for Americans take into account the currently known information about nutrition. The guidelines were issued jointly by the United States Department of Agriculture and the United States Department of Health and Human Services in 1995 and were updated in 2005. The guidelines contain suggestions and recommendations to promote and maintain wellness.

Table 3:

2005 Dietary Guidelines for Americans

Focus & Examples

- Adequate Nutrients Within Calorie Needs - Consume a variety of nutrient-rich foods.
 - Weight Management - Balance calories from foods with calories expended.
 - Physical Activity - Engage in regular physical activity at least 30 minutes most days.
 - Food Groups To Encourage – Consume fruits, vegetables, whole grains and dairy.
 - Fats - Keep total fat intake between 20 to 35 percent of calories
 - Carbohydrates - Choose fiber-rich fruits, vegetables, and whole grains often.
 - Sodium - Consume less than 1 teaspoon of salt per day
 - Food Safety – Avoid food-borne illness by cleaning hands, food contact surfaces, and fruits and vegetables. Separate raw, cooked, and ready-to-eat foods, cook foods to a safe temperature, chill perishable food promptly and properly.
-

For the purposes of this study the focus will be on food groups to aid in educating students about, fats, and carbohydrates. It is recommended in the Dietary Guidelines that at least half the grains should be whole grains and that children should consume 2 cups of fat-free or low-fat milk or milk products (United States Department of Health and Human Services, 2005). Total fat intake for teens is recommended to be between 25-35% calories. Carbohydrates should be consumed with a focus on how much dietary fiber is identified on the food label. A high fiber food has three grams or higher per serving.

The Dietary Guidelines recommend making smart choices from every food group, finding balance between food and physical activity and getting the most nutrition out of your calories (United States Department of Health and Humans Services, 2005). Teens live in the here and now and tend not to be concerned with how their current eating patterns will later affect their lives (Stang, 2005). Too often the message teens interpret is that eating what you do not like is good for you. We need to work as educators to dispel this myth by providing nutrition facts to today's youth.

The School Breakfast Program has created a way for students to get a healthy start to their day. In 1966 a two-year pilot project was designed to provide grants to assist schools serving breakfasts to nutritionally needy children. In 1975 the program received permanent authorization. Congress declared its intent that the program "be made available in all schools where it is needed to provide adequate nutrition for children in attendance" (United States Department of Agriculture, 2007). Schools with greater than 40% of their students receiving free or reduced price lunches qualify as schools with severe need of offering school breakfast. To further address growing concerns about childhood obesity and nutrition, Congress now requires each local education agency that participates in USDA's school meals programs to establish a

local wellness policy by the beginning of the 2006-2007 school year (United States Department of Agriculture, 2007).

Benefits of including breakfast at school include an overall improved quality of children's diets. Finding from UW-Extension (2005) found that providing school breakfast increased consumption of fruits and milks, which increased the intake of vitamins A and C and calcium. Overall academic performance and behavior were noted as benefits of which improved the learning environment. The 5 Star Child Nutrition Task Force (1999) added that school breakfast programs allow parents to know their children are receiving a nutritious breakfast. Nationally 83% of schools participate in School Breakfast Programs, with 58% of Wisconsin schools participating (UW-Extension, 2005). Schools are also eligible for reimbursement and funding through the Food and Nutrition Service, United States Department of Agriculture and local state Department of Public Instruction. Several nutritional requirements have been set for schools that do serve school breakfast. See figure 4.

Table 4:

Nutritional Requirements for School Breakfast Programs

-
- * Breakfast offered as part of the School Breakfast Program must meet current dietary guidelines.
 - * Breakfasts must contain $\frac{1}{4}$ of a child's daily requirements for calories, protein, calcium, iron, vitamin A and vitamin C.
 - * No more than 30% of calories can come from fat, with no more than 10% of calories as saturated fat.
 - * Generally, breakfasts contain a serving of milk, fruit or fruit juice, and two servings from the grains or meat/meat alternative group (or one serving from each).
-

School breakfast programs should be evaluated for nutritional content. Many nutritious foods like fresh fruits and vegetables are higher in cost or spoil to quickly. A goal of this researchers work is to help improve the overall nutrition of our school's breakfast offerings.

Several suggestions have been made by researches on how to improve the eating behaviors of teens. Lytle (2001) found that teens should be given a chance to prepare and eat healthy breakfast foods and snacks. Stang and Story (2005) recommended that teens should be encouraged to eat breakfast, even if that includes items not included in a traditional breakfast. Something for breakfast is better than no breakfast. Nutrition education and counseling should focus on the positive aspects of a healthy diet including increased energy levels, better school and athletic performance. Teens also need to be taught about how to make healthy food choices, especially in regards to eating at fast food restaurants. Because teens focus on the present nutrition information must stress the short-term benefits of eating breakfast.

Family and Consumer Education teachers, Health teachers, administration, food service coordinators and school health and wellness policy committee members have a key role in helping students meet their nutritional health requirements. With knowledge about teen breakfast patterns and factors that affect breakfast consumption educators can help teens focus on their health and nutritional needs.

Chapter III: Methodology

The purpose of this study is to examine the factors that influence Augusta middle and high school students' breakfast consumption. The study is quantitative in nature. The study included data that was collected through a ten-item assessment on breakfast. Included in the assessment were questions about what students consume for breakfast, how often they eat breakfast in a week, where they eat breakfast, why they don't eat breakfast and what behaviors they identified after not eating breakfast. Themes looked at include the importance of eating a well-balanced, nutritious breakfast, why students skip breakfast, if they do, and what behaviors result in that choice. Programs related to breakfast and performance are out there to help educators teach students good breakfast eating habits. In this section information will share information about the assessment used to collect the data on breakfast consumption, the subjects who completed the assessment and the data analysis that followed.

Subject Selection and Description

Before starting the data collection process, the breakfast assessment and research design was reviewed by the Institutional Review Board for the Protection of Human Subjects at the University of Wisconsin Stout. See Appendix C for a copy of the letter. All students in grades six through twelve at Augusta Middle and High School were eligible for subject selection. 356 students are enrolled in middle and high school. Parents and guardians were notified about the study to gain parental consent for student participation through our school newsletter. I wrote an article for our school's newsletter that included my initial literature review and research. The newsletter article published in October of 2007 included a statement of informed consent (Appendix A). Forms were collected in the middle and high school office throughout the month of October. Participation in the breakfast assessment study was completely voluntary. Students

who turned in a parent permission slip were part of the study. A list of students who were eligible was kept and those students were notified when and where to go to complete the assessment.

Instrumentation

The assessment questions were modified from the "School Breakfast for First Class Learning" toolkit put together by the 5 Star Child Nutrition Task Force. The modifications were designed to collect data about Augusta middle school and high school student breakfast consumption habits. The assessment (Appendix B) is user friendly and was field-tested several times prior to the study to make sure words were age appropriate and questions made sense. The assessment starts with the descriptive questions about age, grade and gender. This information allows for specific gender, age and grade level data analysis. The assessment proceeds to ask students about what they eat and drink for breakfast on a particular day, how many days during a week they eat breakfast, where they eat breakfast, why they don't eat breakfast and what behaviors noted when they chose not to eat breakfast.

Data Collection Procedures

Initial permission to conduct this study was granted by the Augusta Middle and High School principal and district superintendent in August 2007. Communication with the principal in regards to parent consent, timing of the assessment and overall plans necessary to conduct the research were discussed. For our school setting the best strategy for parent consent was determined to be our school's monthly newsletter. The researcher wrote an article about the study and the article included a parent consent form. Consent forms were turned into our school office by October 31, 2007. Assessments were given to students, by the researcher, during breakfast break to those students who had permission. Those students were asked to report to the

Library Media Center. No identification number or name was on the survey, however students were checked against a checklist of students whose parents had signed the consent form. Subjects who completed their assessment during break and turned it into the basket in the Library Media Center received a granola bar and orange juice. The researcher collected a total of 258 assessments. That included 142 females and 116 males. The sample size is adequate for purposes of this study.

Data Analysis

The researcher performed data analysis by using an Excel spreadsheet. The researcher looked at descriptive data in relation to breakfast consumption patterns. The items were analyzed by looking at frequency, mean, and percentages. Grade levels were compared with each other as well as responses by gender. My hypothesis was that middle school students eat breakfast more frequently than high school students. Likewise, as students get older they are more likely to skip breakfast.

Limitations

There were several limitations in this study. First, the instrument had no measure of validity or reliability as it was modified from an existing assessment to be specific to this study. Second, only one school district was included in this study, therefore results may not be generalized to other districts who do not fit within that description. Students also may not have answered questions honestly to respond as they thought the researcher would have wanted.

Chapter IV: Results

This research was completed to examine the factors that influence Augusta middle and high school students' breakfast consumption. The following results are based on the analysis of the data that was collected from 258 middle and high school students in Augusta, WI. The study includes data that was collected through a ten-item assessment on breakfast. The assessment starts with questions about age, grade and gender. Question one asks about what students ate and drink for breakfast on that particular day and proceeds to ask how many days during a week they eat breakfast. They circled numbers one through seven based on their breakfast consumption days. Question three asks students where they ate breakfast, either at home before school, in route to school, before school at school, or during our school breakfast break. Question four is for students who do not eat breakfast everyday and asks them to check all the reasons why they do not eat breakfast everyday. The last question asks students to identify what behaviors they note when they chose not to eat breakfast. Data analysis was meant to identify areas of improvement in regards to student nutrition and breakfast consumption patterns.

Item Analysis - Nominal Data

The group for this research was comprised of 258 students from Augusta Middle and High school. This sample group was made up of 55% females and 45% males. Broken down by grade level the study consists of, 10% 6th graders, 12% 7th graders, 15% 8th graders, 12% 9th graders, 19% 10th graders, 17% 11th graders, and 15% 12th graders.

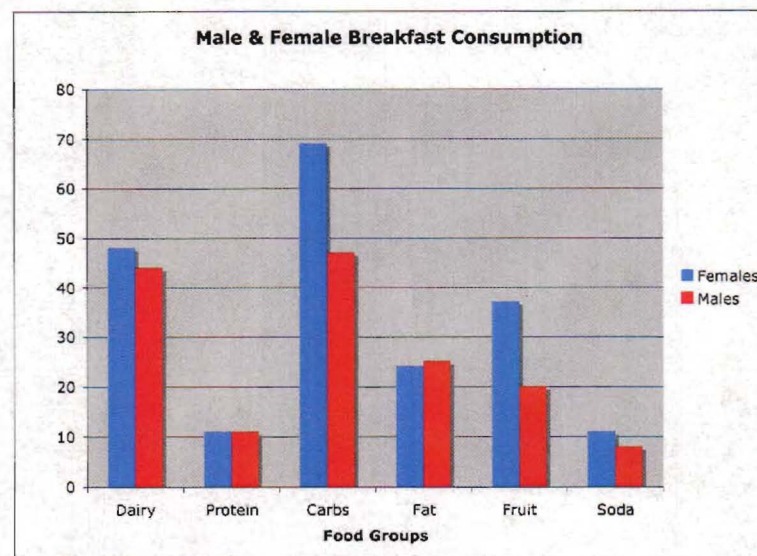
Item Analysis – Breakfast Foods Consumed

Students were asked to document what they ate and drank for breakfast on the day of the breakfast assessment. They were to include all foods that they ate at home, on the way to school, at school before school and during breakfast break. The school breakfast menu for the day the

survey was given included: egg sandwiches, choice between milks and juices, fresh fruit, pre-packaged items like muffins and pastries, and string cheese. The study identified female students tended to eat mostly from the carbohydrate, dairy and fruit groups. Male students tended to eat mostly from the carbohydrate, dairy and fat groups. The most common foods for both genders were cited as cereal and milk with fruit juice.

Figure 3:

Food Group Consumption by Gender



Both genders tended to consume fruits in the form of juice with very little actual fresh fruit being eaten and milk drank was mostly cited as chocolate milk. Besides cereal, other grains that were popular were waffles or pancakes (which may better fit in the fat group with the syrup and butter that was noted to be added to them). In a study on the diets of youth in America it was found that nearly all of grains consumed were non-whole grain (Story, 2000). Most commonly documented foods high in fats were Pop tarts, donuts, muffins and cinnamon rolls.

There was also an incidence of caffeine consumption in the form of soda most commonly, but also in the form of coffee, as students got older. Youth have been found to be

heavy consumer of soda, with 70-85% of youth consuming it on a daily basis, with males making up most of that percentage (Story, 2000). For breakfast, 7% of Augusta youth identified that they had consumed a caffeinated beverage for breakfast. It is believed that this number is actually higher and that students did not document it in their breakfast consumption food listings. The researcher has observed many more students drinking soda or coffee for breakfast and throughout the day.

It should also be noted that several students ate breakfast in multiple locations, which creates high calorie consumption for breakfast. Typically 1/3 of our calories should come from breakfast. (Zullig, 2006) Some students would exceed this recommendation if a calorie count were to be analyzed.

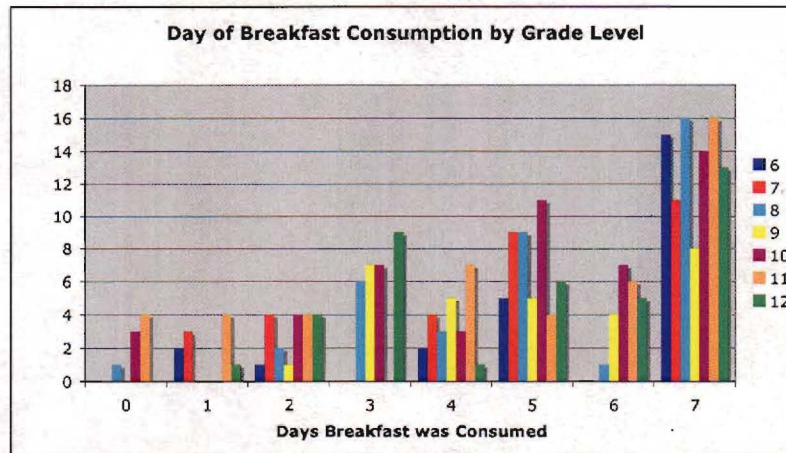
Item Analysis – Number of Days of Breakfast Consumption

Students were asked to identify how many days out of the seven they eat breakfast. 36% of students identified eating breakfast everyday of the week, while 26% eat breakfast three days or fewer. According to the 2005 Wisconsin Youth Risk Behavior Survey, 14% of students reported not eating breakfast at all in a seven day time period. Nationally, 16% of students do not eat breakfast (UW-Extension, 2005). In Augusta only 3% of students reported not eating breakfast at all in a week: one of the students was a middle school age and eight were high school aged. Overall our lower number compared to the state and national average could be a compliment to our school's offering of a school breakfast program.

When grade level data is compared for the number of days of the week breakfast is consumed, 16% of middle school students and 19% of high school students said they eat breakfast everyday. I hypothesized that the number of middle school students would be a higher here than high school student. However, when you look at the data for students who consume

breakfast three days of the week or less, middle school students make up 5% versus 10% of high school students.

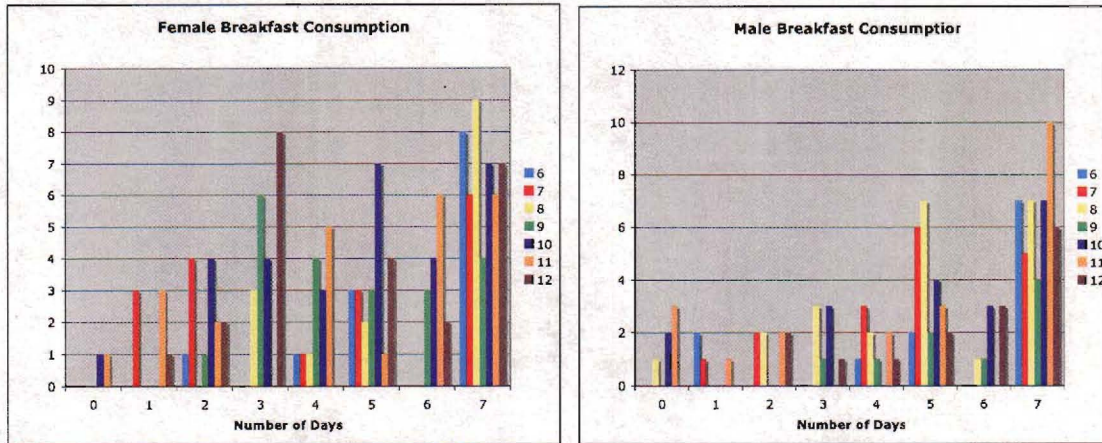
Figure 4:



The Center for Disease Control found that the percentage of your people who eat breakfast decreases with age (2006). For the most part this fact can be said to be true for Augusta students; however, the number of high school students not eating breakfast fewer than three days in a week is a concern. Later data will look at why breakfast is not eaten most days of the week and how that affects school performance.

By gender 17% of males and 18% of the females surveyed ate breakfast everyday with 10% of the males and 16% of the females eating breakfast three days or fewer. When broken down into middle school data, 4% of males and 4% of females eat breakfast fewer than three days a week compared to the high school data of 6% of males and 12% of females. This again demonstrates the fact that as students age they are eating breakfast less often, especially the female population.

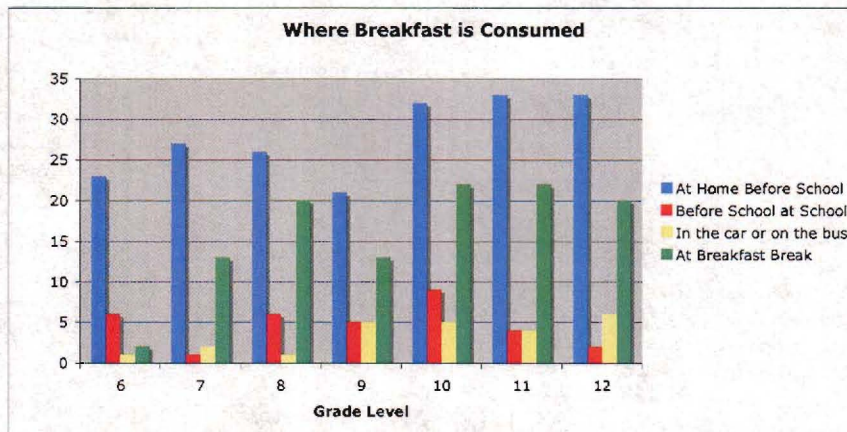
Figure 5:



Item Analysis – Number of Days of Breakfast Consumption

Students were asked to check all of the places that they eat breakfast. Choices include: a) home before school, b) on the way to school c) before school at school, or d) at breakfast break. Students who ate at more than one location make up 35% of the data. The most common place to eat breakfast was at home before school with 76% of the total number of students. 44% of students identified that they ate at breakfast break. This data supports our breakfast program purpose to provide students an opportunity to eat breakfast at school.

Figure 6:



According to State Superintendent Elizabeth Burmaster, "school breakfast programs are helping end hunger in the classroom, so students can concentrate on their classes" (OnWEAC, 2007). What we do need to be careful of is the nutritional value of the breakfast being offered at school. Whether this is the second round of breakfast for the 35% of students who are eating in multiple locations or if this is the first food going into students systems, we need to have it be nutrient dense. Further study needs to evaluate that value.

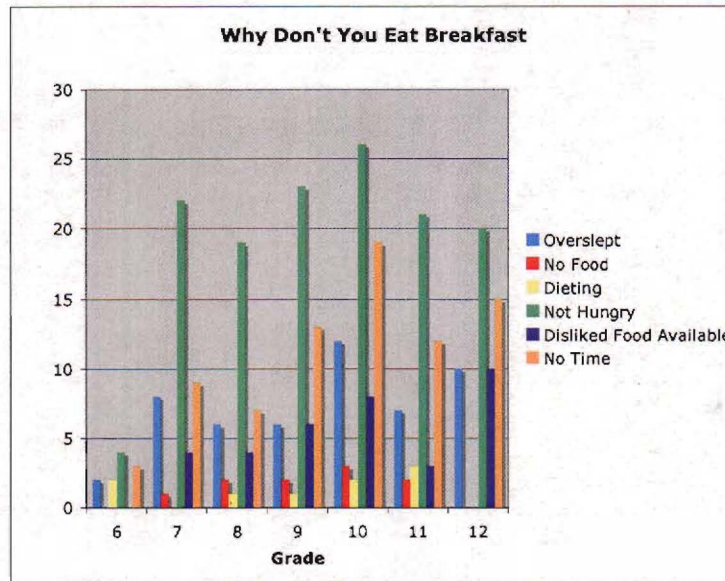
Item Analysis – Why Don't You Eat Breakfast?

Students identified reasons for not eating breakfast everyday of the week by checking all that apply a) overslept, b) no food available, c) diet or weight control, d) not hungry e) disliked food available or f) not enough time. Forty-five students marked the line stating that they eat breakfast everyday and did not mark any other reasons based on that fact. This was interesting because 91 students earlier noted they eat breakfast all seven days of the week. This discrepancy in data is attributed to the fact that students may not eat what they consider to be a full breakfast all seven days of the week. If students ate little to no breakfast, they may not have counted that in their originally tally. When they got to this question about reasons why they don't eat breakfast they may have identified reasons that they don't eat or eat little.

The most common reason, 52% of students, given for not eating breakfast was given as not feeling hungry. The second reason was that they didn't feel they had enough time, 30% of students. These findings are consistent with a study done by UW-Extension in 2005 in which they state that not all students eat breakfast at home due to not being hungry and lack of time. Van Wees also found lack of time and not being hungry to be the most common reasons (2006). Adolescents in focus groups identified lack of time, inconvenience of eating healthy, lack of self discipline and lack of a sense of urgency to be healthy as factors (Story, 2000). Overall it seems

that students don't put a high priority on eating breakfast and may not see a correlation to breakfast consumption and school performance.

Figure 7:



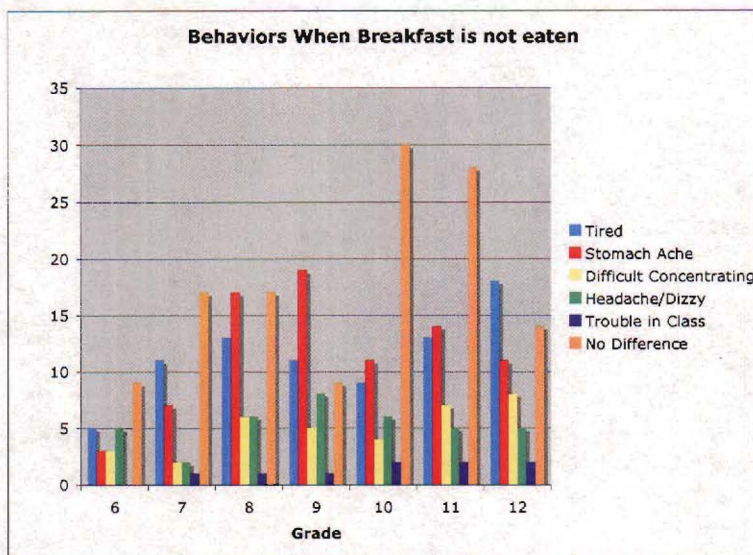
A hypothesis of this study was that more females would skip breakfast in an attempt to diet or lose weight. Studies that have been conducted reports that girls often skip breakfast because they believe it might make them fat and are concerned about gaining weight (Food Research and Action Center, 2007). Only nine students identified this as an issue, 5 females and 4 males with most being high school aged. In this study, diet and weight do not seem to be an issue of focus. However, further work could be done focusing on just weight loss techniques to get data about this topic.

Item Analysis – What Behaviors Do you Notice When Breakfast is not consumed?

Students were asked to check all the behaviors that apply to them when they do not consume breakfast. Their choices included feeling tired, getting a stomachache or headache, having difficulty concentrating, getting in trouble in class or no noted difference in behavior. 48% of students surveyed identified no noted difference in their behavior. Second in behaviors

noted was getting a stomachache or feeling hungry at 32%, followed closely by feeling tired at 31% of students.

Figure 8:



There are many studies that sight the benefits of eating breakfast on school performance. Included data includes a better overall performance in class, more alert behavior, fewer headaches and stomachaches, and higher attendance rates and test scores (5 Star Child Nutrition Task Force, 1999). However there are few studies focused on student perceptions of those benefits. This study found almost half of the students noted no difference in their behaviors after skipping breakfast. This could be due to the fact that they may not pay attention or attribute behaviors to breakfast consumption or lack thereof. One study found that children reported that they believe breakfast increases energy and their ability to pay attention in school, but little more was said about their other perceptions (Food Research and Action Center, 2007).

More work needs to be done to look at teen perceptions in relation to breakfast consumption. Education about the benefits and correlations of breakfast and behaviors that affect school performance needs to be another area of focus with teens.

Chapter V: Discussion

Summary

Breakfast has long been known as the most important meal of the day, but do students possess that viewpoint? The objectives in this study were to identify the percent of Augusta middle school and high school students who are skipping breakfast; determine where students are most frequently eating breakfast; discover why students are skipping breakfast and what behaviors they note as a consequence.

258 students from Augusta Middle and High school made up the sample group for this study. This number was comprised of 55% females and 45% males of which 10% were 6th graders, 12% 7th graders, 15% 8th graders, 12% 9th graders, 19% 10th graders, 17% 11th graders, and 15% 12th graders. Students in the study tend to eat breakfast cereal, milk, fruit juice, soda and/or high fat foods for breakfast. 36% of students identified eating breakfast everyday of the week, while 26% eat breakfast three days or fewer. The most common place to eat breakfast was sited as at home before school with 76% of the total number of students, while 44% of students identified that they ate at breakfast break. Checking multiple answers was acceptable for where breakfast is consumed and 35% of students eat in multiple locations. 52% of students responded that they did not eat breakfast because they did not feel hungry. 30% of students sited that they didn't feel they had enough time to eat breakfast. 48% of students surveyed identified no noted difference in their behavior. Getting a stomachache or feeling hungry was noted by 32% of students, followed closely by feeling tired at 31% of students.

Limitations

1. When students completed the breakfast assessment the researcher assumes that honest answers were given.

2. It is assumed that answers were not biased based on wanting to please the researcher.
3. It is assumed that results will be published for school staff, parents and students to read and learn about the importance of eating breakfast.
4. Results represent a single school and may not correlate to other schools due to limited race diversity and a free and reduced rate of 50% of the total school population.
5. The assessment asked students what they had for breakfast that morning. This may not represent what they typically eat each morning. A further study would take more days into account.

Conclusions

Augusta statistics were similar to other research findings at the state and national levels. Older student eat breakfast less often, especially in the female population. Students did not put a high priority on eating breakfast, specifically the nutritional value of what they eat. Teens also don't seem to see a correlation to breakfast consumption and school performance.

A National study of teen eating habits by Story and Stang (2005) found that teens are most commonly reaching the minimum required servings in the grain and dairy group, but are lacking in the fruit and protein groups. Augusta findings in breakfast consumption also demonstrated that students focus on grains and dairy, while eating less fruits and proteins.

The only noteworthy difference in data in Augusta versus state or national data was that in Augusta only 3% of students reported not eating breakfast at all in a week. Wisconsin reported 14% of students reported not eating breakfast everyday of the week (Wisconsin Youth Risk Behavior Survey, 2005). Nationally, 16% of students do not eat breakfast (UW-Extension, 2005). The lower percentage in Augusta could be a compliment to the school's breakfast program offering. A focus needs to be on the types of foods that we offer based on the findings

that students are most often consuming grains, dairy and fats and are lacking in fruits and proteins.

Recommendations

Youth have been found to be heavy consumer of soda and Augusta youth are no different. Milk, juice and water machines should replace soda machines in schools. Augusta has implemented this change and it should remain. More information about caffeine and sugar contents of soda should be provided to students.

Students may eat breakfast in multiple locations, which may add unneeded calories to their daily levels. On the other hand, school breakfast programs may be the only source of nutrition for breakfast that a student consumes. Further study needs to evaluate the nutritional values of foods offered to determine what should be on the menu. Pre-packaged muffins and pastries are most often noted as what a student will select for breakfast. A school breakfast program needs to be maintained, but needs to be evaluated to determine whether the most nutritious options are being made available to students.

Overall students do not put a high priority on eating breakfast and may not see a correlation to breakfast consumption and school performance. Students need to be educated about the benefits of eating more healthful and nutritious foods, especially at breakfast. More work needs to be done to look at teen's perceptions in relation to breakfast habits and the behaviors that affect school performance.

Students may be using skipping breakfast as a weight loss technique. These findings did not appear to be an issue at Augusta, but schools should do further work focusing on weight loss techniques to get data about this topic.

Students should be encouraged to take classes that teach food and nutrition skills and food preparation techniques. These can be found within the Health and Physical Education and Family and Consumer Education departments. Family and Consumer Education classes help students learn key food preparation skills that help aid in preparing more nutritious foods. Many of the skills that are needed in teen nutrition are taught in the course work of the classes offered in these departments.

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Appendix A: Letter and Statement of Informed Consent

September 4, 2007

Dear Parent(s) or Guardian(s),

My name is April Burback. I am the Family and Consumer Education teacher for the Augusta School District. As part of my Master's Degree work I am conducting a survey on "Factors Influencing Breakfast Consumption".

Topics to be examined include what students consume for breakfast, how often they eat breakfast in a week, where they eat breakfast, why they don't eat breakfast and what behaviors they note after not eating breakfast. The assessment on breakfast consumption is completely anonymous. Students will not have their name anywhere on the assessment, no any other type of identification number.

This research has been approved by administration at Augusta Middle and High School and by my professor at UW-Stout, as well as the Instructional Review Board at UW-Stout. If you have further questions please contact Dr. Diane Klemme at UW Stout (715) 232-2546 or the IRB at Sue Foxwell, 152 Voc Rehab, UW-Stout, Menomonie, WI 54751 715-232-1126, foxwells@uwstout.edu.

If you have issues with your son or daughter participating in the breakfast assessment please contact me by phone at 286-3387 or via email at burbaapr@augusta.k12.wi.us. Questions about the assessment can also be directed to me using those forms of communication.

Thank you for your cooperation.

Sincerely,

April Burback
Family and Consumer Education Teacher
Augusta School District

I understand that my participation in this study is strictly voluntary and anonymous. I may discontinue participation at any time without prejudice. All surveys will be destroyed at the end of data entry. It is understood that the purpose of this study is to investigate breakfast habits of students. Please return to the office by October 31, 2007.

Signature of Student : _____ Date : _____

Signature of Parent : _____ Date : _____

Appendix B: Breakfast Assessment

Please answer the questions below so that we can learn more about breakfast eating habits. Your honesty is appreciated. Turn your survey in at the office when you are done and pick up a snack.

What is your age? _____ What grade are you currently in? _____

What is your gender? Male Female

1. What did you eat and drink for breakfast today? (Include all items you ate and drank at home before school, on the way to school, at school and during school breakfast break, as specific as possible)

2. How many days during a week do you eat breakfast? Either at home, on the way to school, at school, or during breakfast break. (please circle one answer)

1 2 3 4 5 6 7

3. Where do you eat breakfast? (check all that apply)

_____ At home before school _____ In the car or bus
 _____ Before school at school _____ During breakfast break

Other : _____

4. If you don't eat breakfast everyday of the week, why not? (check all that apply)

_____ overslept _____ not hungry
 _____ no food available _____ disliked food available
 _____ for diet / weight control _____ not enough time
 _____ I eat breakfast everyday

Other : _____

5. When you don't eat breakfast what behaviors do you notice? (check all that apply)

_____ I feel tired _____ I get a headache
 _____ I get a stomach ache _____ I get in trouble in class
 _____ I have a difficulty concentrating _____ I don't notice a difference

Other : _____

Appendix C: Institutional Review Board Letter of Protection of Human Subjects in Research