

A Comparison of Food Habits of Middle School Students

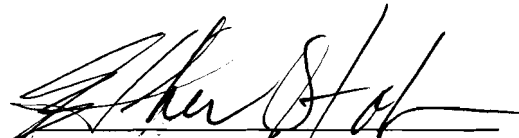
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ABSTRACT

Children and adolescents in the United States, overall, do not have healthy food habits. Previous studies indicate a decline in milk consumption with an increase in soda pop consumption, a decrease in fruit and vegetable consumption, an increase in salty snack food and candy consumption with a decrease in desserts eaten as snacks, and an increase in fast food consumption.

Poor food habits can contribute to an undesirable body weight. It is estimated that 17% of children and adolescents aged 2 to 19 years are overweight. Childhood overweight can predict adulthood overweight. Because food habits are learned in childhood and tend to persist into adulthood, the timing for the development of healthy food habits is important.

The main objective of this study was to examine the food habits of sixth graders by determining the frequency of daily intake of milk, soda pop,

vegetables, fruit, sweets, chips or other salty snack foods, and fast foods within a 24-hour time period and by determining the food use of boys and girls.

The subjects included boys and girls in the sixth grade at a local middle school. A total of 42 students, 19 boys and 23 girls, completed the survey designed specifically for this study.

The results indicated that boys and girls had similar food habits for milk, soda pop, vegetables, fruit, sweets, and fast food consumption. There was a statistical significant difference for the number of times that boys and girls ate chips and other salty snacks. Boys ate chips or other salty snack foods more often than the girls did.

The results of this study are of importance to the involved middle school, nutrition professionals, and other public health educators. It is recommended that further studies be done to determine the quantity of the targeted foods consumed, interview the participants one-on-one, and incorporate a larger sample size.

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Chapter I: Introduction

Individuals' food habits can affect the body in many ways including body weight. Healthy food habits, as part of an appropriate dietary intake for age, gender, and physical activity level, can promote a desirable body weight. On the other hand, poor food habits and inappropriate dietary intake, specifically excessive intake, can promote overweight or obesity.

Food habits are learned in childhood and, often times, the food habits learned in childhood are practiced throughout adulthood. Lien, Jacobs, and Klepp (cited in Befort et al., 2006) report that adolescents form dietary habits affecting weight status that will persist into adulthood. Therefore, timing the development of food habits of children and adolescents is crucial.

Children who make poor food choices may suffer with undesirable body weight issues. Unfortunately, childhood overweight and obesity may lead to adulthood overweight and obesity, thus raising the risk for chronic diseases. In a review article by Dietz (1998a), about half of all obese adolescents with a body mass index at or above the 95th percentile eventually become obese adults. Dietz (1998a) further reported that obesity in adolescence led to increased all-cause mortality and mortality from cardiovascular disease and colon cancer among adult men. In addition, obesity during adolescence led to increased rates of cardiovascular disease and diabetes later in life for adult men and women.

Being overweight can create serious health consequences. Some complications of overweight in childhood include adverse effects on growth, psychosocial difficulties including self-esteem and self-image issues,

hyperlipidemia (elevated serum low-density lipoprotein cholesterol levels and triglycerides and lowered high-density lipoprotein cholesterol levels), hepatic steatosis, glucose intolerance, hypertension, sleep apnea, and polycystic ovary disease (cited in Dietz, 1998b).

Today, it is not uncommon to hear or read about children suffering from type 2 diabetes mellitus (T2DM). Once a disorder more commonly associated with adult onset, T2DM is now being diagnosed in children. In a review article, Hannon, Rao, and Arslanian (2005, p. 473) stated, "the increasing prevalence of overweight closely parallels the rise in the number of cases of T2DM."

Heart disease is also of concern among children. Seven cross-sectional studies among 11- to 17-year-old children in the Bogalusa Heart Study from 1973-1994 showed that 58% of those overweight had at least one risk factor for cardiovascular disease. Risk factors included total cholesterol level greater than 200 mg/dL, triglyceride level greater than 130 mg/dL, low-density lipoprotein cholesterol level greater than 130 mg/dL, high-density lipoprotein cholesterol level less than 35 mg/dL and high levels of insulin, systolic blood pressure, or diastolic blood pressure (Freedman et al., 1999).

The rate of childhood overweight is increasing. In fact, just over two decades ago, one in every fifteen children aged 6 to 11 years and one in every twenty children aged 12 to 19 years was considered overweight (Ogden et al., 2002). Based on data collected from the 1999-2002 National Health and Nutrition Examination Study (NHANES), it was estimated that one in every six (16.6%) children in the United States aged 6 to 19 years is overweight and there

is not any evidence that overweight is decreasing (Hedley et al., 2004). In fact, in 2003-2004, 17.1% American children and adolescents aged 2 to 19 years were considered overweight (Ogden et al., 2006).

Increasing rates of overweight is a national concern. Healthy People 2010, developed by the U.S. Department of Health and Human Services, is the nation's main health agenda for the decade. One of its specific objectives concentrates on reducing the proportion of children and adolescents who are overweight or obese (Healthy People 2010, n.d.c). Its two broad goals are "to increase quality and years of healthy life" and "to eliminate health disparities" (Healthy People 2010, n.d.a., n.p.). Healthy People 2010 consists of 467 objectives that promote health and disease prevention and are divided into 28 focus areas (cited in National Center for Health Statistics, 2004). The objectives are intended to be achieved by the year 2010. There is a limited set of objectives that represent the major national health concerns and are known as the leading health indicators. Among the ten leading health indicators is overweight and obesity (Healthy People 2010, n.d.b.).

Since overweight in childhood or adolescence is associated with adult morbidity and mortality, it makes sense that good food habits need to be developed in childhood and adolescence so they can be carried into adulthood. Adolescence is a period in life marked by a dramatic increase in growth and development, thus an increased demand for nutrients (Mahan & Escott-Stump, 2000).

Learning and developing healthy food habits to meet the increased need for nutrients can be challenging. The development of healthy food habits can be affected by lifestyle situations and influenced by family, peers, and the media. Events and situations associated with adolescence could affect genders in different ways. According to Videon and Manning (cited in Befort et al., 2006) adolescence is a time when individuals experience increasing control over food choices. Genetic traits, brain neurotransmitters, age, sex, obesity, restraint, self-efficacy, and environmental factors can determine children's food choices (cited in Bloomgarden, 2002). According to Mahan and Escott-Stump (2000), adolescents have irregular meal times, eat away from home more frequently, and follow alternative dietary patterns.

It is important to understand current food habits of children and adolescents. Having such knowledge can help direct the future of nutrition education programs to promote healthy food habits of children and adolescents. If children and adolescents develop healthy food habits, it is possible that the rate of childhood overweight will decrease.

Statement of the Problem

The purpose of this study was to examine and compare food habits of male and female sixth grade students at a middle school in western Wisconsin. Data, collected in February 2006 through a survey, compared the frequencies of milk, soda pop, vegetables, fruit, sweets, chips or salty snack foods, and fast food consumption in a 24-hour time period. The main outcomes of this research were derived at an ideal time and used to assist schools and professionals in

targeting educational needs of the population. On June 30, 2004, the President of the United States signed Public Law 108-265, known as "The Child Nutrition and WIC Reauthorization Act of 2004" (United States Department of Agriculture Food and Nutrition Service, n.d.). Under Section 204, it is mandated that any school participating in the National School Lunch and/or Breakfast Program must establish a local wellness policy by the beginning of the school year 2006-2007. At a minimum, the local policies shall include goals for nutrition education, physical activity, and nutrition guidelines for all foods available on each school campus. The school involved in this study can benefit from the results obtained as no data were available on the food practices of students enrolled at the participating school at the time of the study. Such information will help school officials and others develop policies that target nutrition education goals and guidelines to needs of the students.

Research Objective

The overall objective of this study was to examine the food habits of sixth graders by determining the frequency of daily intake of milk, soda pop, vegetables, fruit (not including juice), sweets, chips or salty snack foods, and fast foods within a 24-hour time period and by determining the food use of boys and girls.

Definition of Terms

For this study, the following key words were defined to further clarify the content of this research paper.

Adolescence. "The period of life beginning with the appearance of secondary sex characteristics and ending with the cessation of somatic growth" (Mahan & Escott-Stump, 2000, p. 257).

Body mass index (BMI)-for-age. A gender and age specific tool for assessing underweight, overweight, and risk for overweight among children and teens (Centers for Disease Control and Prevention, 2005).

Fast food. "Food which is supplied quickly after ordering, and by minimal service" and "food which is prepared and served quickly at outlets called fast-food restaurants" (Wikipedia: The Free Encyclopedia, 2006, n.p.).

Food frequency. A term describing how often foods are consumed over a specific time period.

Food habits. "Acquired or learned food preferences" (Food habits, 2005, n.p.).

Overweight. "At or above the 95th percentile of the sex-specific BMI-for-age growth chart" (Hedley et al., 2004, p. 2848).

Soda/Soda pop. A term for a sweet carbonated drink.

Soft drink. "A usually carbonated nonalcoholic beverage; especially soda pop" (Soft drink, 2005-2006, n.p.).

Assumptions and Limitations

In this study, the researcher has identified some assumptions and limitations.

1. The researcher assumed that the subjects were truthful when filling out the survey.

2. Participants may have answered the items on the survey the way that they thought the researcher wanted, rather than how they truly felt.

3. The results of the study could not be applied to the general population as the sample size was too small and only represented a single school.

4. Parents or guardians may not have been as willing to return the signed informed consent if no incentive was involved.

5. Parents or guardians may not have noticed the letter with the report card or may have chosen to ignore it.

6. Children could not have been completely trusted in returning the informed consent from their parents or guardians.

7. This study asked students to reflect on what they ate the previous day instead of what they usually eat in a day. The participants may not have remembered what they ate the day before.

8. Students might have interpreted fast food differently from others since there were not examples of fast food provided on the survey.

9. Because age was not collected, it was assumed that the students involved in this study were approximately 11- to 12-years-old, based on their grade level.

Chapter II: Literature Review

Introduction

This chapter includes a discussion of primary dietary recommendations for children and adolescents and review of studies on specific food habits among children and adolescents. There is an emphasis on differences among males and females in the studies presented. The first segment of this chapter concentrates on differences in beverage (milk and soda pop) consumption. Also included in this chapter is a discussion of fruit and vegetable consumption, snack consumption, and fast food consumption among children and adolescents.

Dietary Goals and Recommendations for Children and Adolescents

There are specific dietary goals and recommendations for children and adolescents. The United States Department of Agriculture (USDA) and the United States Department of Health & Human Services (HHS) publish the Dietary Guidelines for Americans. The Dietary Guidelines are recommendations for promoting health and reducing risk for chronic diseases through diet and physical activity. They are targeted to those over the age of 2 years living in the United States (Dietary Guidelines for Americans 2005, 2005). Selected recommendations are listed in Table 1.

Table 1

Dietary Guidelines for Americans 2005: Selected Recommendations

Eat 2 cups of fruit and 2 ½ cups of vegetables per day.

Consume 3 cups of fat-free or low-fat milk products daily.

Minimize the intake of fats and oils high in saturated and trans fatty acids while emphasizing polyunsaturated and monounsaturated fatty acid sources.

Choose foods low in salt.

Select foods and beverages low in added sugars and caloric sweeteners.

The USDA MyPyramid Food Guidance System translates the Dietary Guidelines for Americans into practical recommendations for consumers. MyPyramid provides recommendations for males and females of various age categories. According to MyPyramid, girls and boys aged 9 to 13 years who engage in less than 30 minutes per day of moderate physical activity (beyond normal daily activities) should consume 2 cups and 2 1/2 cups, respectively, of vegetables daily, 1 1/2 cups of fruit daily, and 3 cups of milk daily (United States Department of Agriculture MyPyramid.gov, n.d.). MyPyramid also provides recommendations for daily intakes of grains, and meats and alternates, and set limits for discretionary calories.

The American Heart Association (AHA) has provided pediatric dietary strategies for individuals older than 2 years of age (Gidding et al., 2006). The strategies reiterate other recent public health dietary guidelines and are very similar to the Dietary Guidelines for Americans selected recommendations.

Table 2 summarizes the recommendations.

Table 2

AHA Pediatric Dietary Strategies

Balance dietary calories with physical activity to maintain normal growth.

Engage in 60 minutes of moderate to vigorous play or physical activity daily.

Eat vegetables and fruit daily while limiting juice intake.

Use vegetable oils and soft margarines that are low in saturated and trans fats.

Eat whole grain breads and cereals rather than refined grain breads and cereals.

Reduce the intake of sugar-sweetened beverages and food.

Use nonfat or low-fat dairy products daily.

Eat more baked or broiled fish, especially oily fish.

Reduce salt intake, including salt from processed foods.

There are other food-specific programs that have been created over the past years to promote good nutrition habits. The “3-A-Day-of-Dairy” program encourages individuals to get 3 daily servings of milk, yogurt, and cheese for stronger bones and healthy bodies. The “5 a Day for Better Health” program encourages Americans to eat 5 to 9 servings of fruits and vegetables daily for good health.

Healthy People 2010 defined objectives specific to nutrition habits (Healthy People 2010, n.d.c.). These objectives include increasing the number of individuals consuming at least two servings of fruit daily, consuming at least three servings of vegetables (at least one-third should be dark green or orange) daily, and meeting calcium recommendations.

Beverage Consumption

In this section, beverages are identified as milk or soda pop/soft drinks. Overall, beverages have varying nutrient content. As stated previously, the Dietary Guidelines for Americans encourage consumption of low-fat or fat-free milk while minimizing intake of beverages with added sugars (Dietary Guidelines for Americans 2005, 2005). Consuming adequate amounts of dairy products is obligatory for children and adolescents. Dairy products provide important nutrients, especially calcium and vitamin D, to help prevent sustaining fractures and developing osteoporosis later in life. Adolescents especially need to meet current dairy recommendations because adolescence is when peak bone mass is attained. In a review article by Greer, Krebs, and the American Academy of Pediatrics Committee on Nutrition (2006), many US children fail to meet current daily calcium recommendations. Only about 40% of boys and 30% of girls aged 6 to 11 years meet calcium recommendations while only 30% of boys and, a surprisingly low, 10% of girls aged 12 to 19 years meet calcium recommendations. On the whole, milk consumption has decreased while soft drink consumption has increased over time. Boys are more apt to drink soft drinks than are girls. Soft drink consumption is especially of concern because, unlike milk, soft drinks contain few nutrients. They are basically “empty” calorie beverages. It is suggested that sugar-sweetened beverage consumption is an independent risk factor for obesity in adolescents (cited in Ludwig, Peterson, & Gortmaker, 2001).

To assess adolescents' total beverage consumption and beverage choices, Forshee and Storey (2003) analyzed data collected from the United States Department of Agriculture Continuing Survey of Food Intake by Individuals (CSFII) 1994-1996 & 1998 among 6- to 19-year-old children. Milk consumption decreased while carbonated soft drinks became more popular in adolescence (ages 12 to 19 years). More boys than girls consumed carbonated soft drinks. Sixty-nine percent of the boys and sixty-two percent of the girls reported drinking carbonated soft drinks. The study indicated that age has a negative association with milk intake while intake of carbonated soft drinks has a positive association with age.

In another study, Enns, Mickle, and Goldman (2003) combined the data from the CSFII 1994-1996, the CSFII 1989-1991, and the Nationwide Food Consumption Survey (NFCS) 1977-1978 to assess trends in US adolescents' (ages 12 to 19 years) food and nutrient intakes. There was a decrease in total fluid milk intake and the proportion of individuals drinking fluid milk among both boys and girls as time elapsed. Concurrent with Forshee and Storey's (2003) results, there were increasing trends of soft drink consumption among boys and girls with a higher percentage of boys, in comparison to girls, consuming soft drinks. There has been a drastic shift in beverage choice and consumption over time. From 1977 to 1978, adolescents actually drank one and one-half times as much milk as any other beverage. Over the years of 1994 to 1996, adolescents consumed two times more soft drinks than milk.

Davy et al. (2004) measured soft drink consumption among 250 middle school students in Mississippi through a 24-hour diet recall. Nearly half of the participants consumed two or more fluid ounces of soft drinks daily and one-third of the students consumed 12 fluid ounces or more daily. Soft drink consumption was slightly higher in males in comparison to females.

Yet another study found that soft drink consumption among children and adolescents aged 6 to 17 years has increased over the years. French, Lin, and Guthrie (2003) pooled data from three national surveys including the NFCS 1977-1978, the CSFII 1994-1996, and the 1998 Supplemental Children's Survey. In this study, soft drinks were defined as carbonated beverages (diet and unsweetened), flavored carbonated waters, and carbonated juices. The average consumption (measured in fluid ounces) of carbonated soft drink among all school-aged children increased by 123% between 1977-1978 and 1994-1998. There was a higher percent increase with the boys in comparison to the girls. The percentage of children consuming soft drinks increased 48% overall between 1977-1978 and 1994-1998. Again, there was a bigger increase seen in the boys, specifically in the boys aged 14 to 17 years.

In a study involving a cohort of 291 students (Lytle et al., 2000), there was a statistically significant decline in the number of students who drank milk between fifth and eighth grade. Boys' intake of milk was statistically different than girls' intake of milk. Among third graders, milk accounted for nearly 70% of beverage choice while milk only accounted for 51% of beverages consumed

among eighth graders. Disturbingly, it was noted that the number of subjects who drank soft drinks actually tripled between third and eighth grade.

Rajeshwari et al. (2005) studied sweetened-beverage consumption trends of 10-year-old children in Bogalusa, Louisiana over a 21-year period (1973-1994). Contrary to most studies, the percentage of children consuming soft drinks significantly decreased from 1973 to 1974 and 1993 to 1994. Among the children who did consume soft drinks, the mean amount consumed remained roughly unchanged from 1973 to 1994.

Blum, Jacobsen, and Donnelly (2005) determined changes in beverage consumption in elementary-aged children in grades 3 through 5 across two years. Overall, the subjects had a significant decrease in milk consumption and a significant increase in diet soda consumption. There were no gender differences in consumption of any type of beverage at baseline or year two of the study.

Harnack, Stang, and Story (1999) used data collected from CSFII 1994 to see if soft drink consumption was associated with consumption of milk, fruit juice, and the nutrients in the beverages. Gender differences were noted among the adolescents aged 13 to 18 years, but not for school-aged participants aged 6 to 12 years. The adolescent boys were more likely to consume 12 ounces or more of soft drink when compared to adolescent girls. The participants who drank more soft drinks consumed less milk when compared to those who drank little or no soft drinks. Greater than one-third of the school-aged children consumed 9

ounces or more of soft drinks and about one-fourth of the adolescents consumed more than 26 ounces of soft drinks daily.

Mrdjenovic and Levitsky (2003) investigated the relationship between sweetened drink consumption, milk consumption, and intakes of important nutrients in 6- to 13-year-old children attending a summer camp. The subjects drank significantly less milk on days when consuming more than 3 glasses of sweetened drinks in comparison to when they did not have any. Boys drank more milk daily than the girls.

Fruit and Vegetable Consumption

It is important to examine the fruit and vegetable consumption of adolescents because fruits and vegetables provide many important nutrients such as fiber, vitamins, and minerals, which are necessary for different functions in the body. Also, eating a diet rich in fruits and vegetables may be of particular importance during adolescence due to a high nutrient need for the rapid period of growth and development. According to Kelder et al. (1994) an adequate fruit and vegetable intake during adolescence may lead to healthy eating patterns in adulthood.

Fruit and vegetable consumption varies among ages and gender. In an older study, Munoz et al. (1997) used data from the CSFII 1989-1991 to assess whether or not children and teens in the United States met national recommendations for food group intake. At the time, recommendations included eating five or more servings of vegetables and fruits daily. Males aged 12 to 19 years met the minimum recommendations for servings of vegetables, but the

female aged 12 to 19 years did not. Neither males nor females aged 12 to 19 met the minimum recommendation for fruit intake. The average fruit intake among males and females was equal.

Fruit and vegetable consumption was examined in four of nine different school sites involved in the community-based research component of the national "5 A Day For Better Health" campaign in a study by Reynolds et al. (1999). The national "5 A Day for Better Health" campaign was created by the National Cancer Institute in an attempt to promote the consumption of at least 5 servings of fruits and vegetables every day. A total of 3,758 male and female students aged 8 to 17 years were included in the study. Data was collected via a 24-hour food recall in three of the four sites, while a 7-day food record was used in the fourth site. The results demonstrated that in three of the four sites, namely Alabama, Louisiana, and Minnesota, fruit and vegetable intake, fruit intake, and vegetable intake rates were higher among boys. Paradoxically, girls in the fourth site, Georgia, had higher levels of intake for fruit and vegetables, fruit, and vegetables.

Lytle et al. (2000) looked at change in eating patterns and food choices from third grade to eighth grade in a cohort of 291 students in Minnesota. Fruit and vegetable consumption declined steadily as subjects aged. In particular, the change in fruit and vegetable intake from fifth to eighth grade was considered significant and the most striking. Among eighth graders, only 37% ate fruit and only 42% ate vegetables. There was no statistical difference between boys and girls.

In a study by Neumark-Sztainer et al. (2002), which included 4,746 adolescents aged 11 to 18 years, fruit and vegetable intake differences varied minimally by gender and the differences were not statistically significant. Researchers measured how well youth in Minnesota were meeting Healthy People 2010 objectives. Overall, the number of subjects meeting the recommendations for fruit and vegetables intakes was much lower than the targeted percentages for Healthy People 2010. Only 45% of the subjects reported eating the recommended two or more daily servings of fruit. The Healthy People 2010 target was 75%. About 17% of the subjects reported eating three or more servings of vegetables and less than one-third of the subjects ate five or more daily servings of fruits or vegetables.

Davy et al. (2004) assessed fruit and vegetable intake among 194 middle school-aged students in Mississippi. The students' intake of fruit and vegetables was much lower than the recommendation of 5 servings per day. The subjects actually had a mean intake of less than one fruit serving and half a vegetable serving per day. To compare males and females, the females consumed more vegetables than did the males, while males consumed more fruit than females. Interestingly, on the specific day for the 24-hour food recall used in the study, 45% of the subjects reported eating no servings of fruits and 59% reported eating no servings of vegetables. Sadly, only 2 of the 194 subjects met the recommendation for servings of vegetables, while 34 of the subjects met the recommendation for servings of fruits.

Granner et al. (2004) examined fruit and vegetable intake among 736 adolescents aged 11 to 15 years. The researchers used a self-reported questionnaire to gather data and found that there were no gender differences in the average number of fruit and vegetable servings consumed daily.

Snack Consumption

Snacks can provide a variety of nutrients, but not necessarily healthy nutrients. Sweet snacks, like cookies and candies, and salty snacks, like chips, can provide “empty calories” whereas fruits or vegetables can provide needed nutrients including various vitamins and minerals. Snacking is highly prevalent among children and adolescents. According to Bigler-Doughten and Jenkins (1987), 80% of adolescents consumed snacks. Cross, Babicz, and Cushman (1994) found that less than 1% of children reported never snacking.

Jahns, Siega-Riz, and Popkin (2001) examined trends in snacking behaviors of individuals aged 2 to 18 years over the past 20 years (1977 to 1996). The researchers utilized three different food surveys including the NFCS 1977-1978, and the CSFII 1989-1991 and 1994-1996. The prevalence of snacking among children increased for all ages from 77 to 91% with the biggest increase seen between the years of 1989 and 1996. Slightly more boys than girls reported consuming at least one snack on the days covered in the study. Snacking among boys and girls 6 to 11 years of age was 92.6% and 90%, respectively. For boys and girls aged 12 to 18 years, 88.4% and 86.6%, respectively, reported snacking. The most significant change in snacking behavior was a greater number of snacking occasions per day.

Field et al. (2004) assessed snack food intake of 9- to 14-year-old children and adolescents participating in the Growing up Today Study (GUTS) from 1996 to 1998. In 1996, the boys ate more servings of snack foods per day than the girls (3.2 vs. 3, respectively). Examples of a snack food serving size included one pop tart, one snack cake, three cookies, and one small bag of popcorn. From 1996 to 1998, snack food intake declined slightly for all participants. However, snacking intake remained higher for boys in comparison to girls during the entire study period.

According to a report released in March 1999 titled "Dole's Fruit and Vegetable Update: What America's Children Are Eating" (Kids' fruit and veggie intake: The facts, 2004), children aged 6 to 12 years have substandard snacking habits. Cookies, desserts, potato chips, other salty snacks, candy, and gum accounted for over half of the snacks consumed by children while fruits accounted for only 16% and vegetables only 1% of snacks consumed by children. Also, carbonated soft drinks and fruit drinks were 5 times more likely to be chosen over 100% fruit juice as a snack.

Nielsen, Siega-Riz, and Popkin (2002) examined food sources of Americans by various age groups between the years of 1977 to 1996 using four nationally representative surveys of the US population. For 2- to 18-year-olds, total energy intake of salty snacks and candy increased while total energy intake of desserts decreased from 1977 to 1996. Similarly, for snacks, increases were seen in salty snacks and candy while there was a decrease in desserts eaten as

snacks. Differences in gender were very small and therefore not reported. This study did not specify what was considered a salty snack or dessert.

Fast Food Consumption

Fast food has become an important part of the diet for children in the United States. In fact, in a study by Guthrie, Lin, and Frazao (2002), there was a fivefold increase in the consumption of fast food by children aged 2 to 17 years from late 1970 to mid-1990. Fast food restaurants or quick-service establishments were typically the overall choice for food consumed away from home (cited in Demory-Luce, 2005). Between the years of 1977 and 1996, the percentage of meals eaten at food fast restaurants increased 200% (French et al., 2001).

There are many characteristics of fast food that can have a negative effect on body weight and overall health. Some of these factors include large portion sizes, high energy density, high content of fat, high sodium content, and low fiber content. With increased fast food intake, individuals may be exceeding the recommendations set by the Dietary Guidelines for Americans for fat, saturated fat, cholesterol, and sodium while not meeting the recommendations for calcium, fiber, and iron.

Nielsen, Siega-Riz, and Popkin (2002) examined trends in energy intake according to location across various age groups. There was an increase in total energy intake in restaurant/fast food use among 2- to 18-year-olds from 1977 (4.8%) to 1996 (14.8%).

In a study by Bowman et al. (2004), data from the CSFII 1994-1996 and data from the 1998 Supplemental Children's Survey were analyzed to report on fast food consumption of 4- to 19-year-olds in the United States. It was estimated that adolescents visit fast food restaurants about two times a week. On a typical day, 30.3% of the total sample (6,212 children and adolescents) reported consuming fast food. When comparing the students who reported eating fast food to those who did not, those who ate fast food consumed more total energy, more energy per gram of food, more total fat, more total carbohydrate, more added sugars, more sugar-sweetened beverages, less fiber, less milk, and fewer fruits and non-starchy vegetables. Specifically, 9- to 13-year-olds had a 6.4% greater total energy intake than 9- to 13-year-olds who did not report eating fast food. Fast food consumption was prevalent among all age groups and both genders. For all ages, more males than females reported eating fast food, 32% and 28%, respectively.

French et al. (2001) found that, overall, three quarters of students aged 11 to 18 years reported eating at a fast food restaurant in a week. Males and females significantly differed in their frequency of fast food restaurant use. More females than males (27% vs. 22.8%) reported never visiting a fast food restaurant in one week. Interestingly, the females who ate at a fast food restaurant three or more times per week also reported a 45% greater soft drink consumption, 23% less fruit consumption, 29% less vegetable consumption, and 21% less milk consumption in comparison to females who reported never eating at a fast food restaurant during the week. For males, there was a 42% increase

in soft drink consumption, 27% less fruit consumption, 32% less vegetable consumption, and 22% less milk consumption.

Paeratakul et al. (2003) analyzed data from the CSFII 1994-1996 and 1998. Forty-two percent of individuals aged 2 to 9 years reported eating fast food on one or both of the survey days. Fifty percent of those aged 10 to 19 years reported eating fast food on one or both of the survey days. For the children who reported eating fast food on one or both of the days, their intake on the day that fast food was eaten was compared with their intake on the day that fast food was not eaten. Subjects consumed less grains, cereal, fruits, vegetables, milk, and legumes and more carbonated beverages on the day that fast food was eaten in comparison to the day that fast food was not eaten. No gender difference was reported specifically for children.

Chapter III: Methodology

Introduction

This chapter begins with information on selection and description of the subjects. Also included in this chapter is information on the instrument used to collect the data, details on the data collection, and information for data analysis. The chapter concludes with a brief description of methodological limitations.

Subject Selection and Description

Prior to initiating the study, the research protocol was reviewed and approved by the Institutional Review Board for the Protection of Human Subjects at the University of Wisconsin-Stout (UW-Stout). All students (boys and girls) in the sixth grade in the spring semester 2006 at Arkansaw Middle School in Arkansaw, Wisconsin were chosen for subject selection. There were 74 students enrolled in the sixth grade at the time of the study. Arkansaw Middle School was chosen because of its close proximity to UW-Stout. Also, it was the one of two middle schools that officials accepted the request to cooperate in the study. In addition, the enrollment of the sixth grade was considered adequate. All parents and guardians of the sixth grade students were mailed a letter explaining the study and a statement of informed consent requesting their child's participation. Participation was completely voluntary. A copy of the letter and statement of informed consent is located in Appendix A. Because the intended subjects of the study were under the age of 18 years, signatures of consent were obtained from the parents or guardians. The students did not have to provide a signature because they were less than 18 years of age. All children whose parents or

guardians signed and returned the informed consent statement were selected to participate in the study. A total of 47 students were included in this category. This number represented a 64% response rate, and thus no letter of reminder was sent to parents and guardians. Ultimately, the students who completed a survey were the subjects of the study.

Instrumentation

This study utilized a survey specifically designed by the researcher to collect information on the food practices of sixth graders. The survey was easy to fill out and contained vocabulary appropriate for the targeted grade level of the study's sample. The survey asked participants to identify their gender (boy or girl) in order to provide a way to stratify the data and then the survey followed with seven items pertaining to their food intake. Specifically, the survey asked subjects to think about what they ate the preceding day and then indicate the number of times that they consumed milk, soda, vegetables, fruit, sweets, chips or salty snack foods, and fast food. A copy of the finalized survey can be found in Appendix B.

The 2005 Dietary Guidelines for Americans was the guiding material for selecting the food items contained on the survey. Because the survey was constructed specifically for this study, there were no measures of validity or reliability. The survey was not test piloted prior to administering it to the subjects.

Data Collection

Permission to conduct the study was sought from the Arkansaw Middle School principal and the Durand School District superintendent in December

2005. Once permission was granted, the researcher coordinated with the middle school principal to determine the most efficient procedures for collecting the data. In late January 2006, the researcher spoke to the sixth grade students and teachers to explain the upcoming survey, to inform the students that their parents or guardians would be receiving a letter in the mail about the study, and to answer any questions that the students or sixth grade teachers may have had. At the end of January, the middle school mailed the letter, statement of informed consent, and a self-addressed stamped envelope to the parents and guardians along with the sixth grade students' report cards. The letter explained the study and requested permission for their child to participate in the study. Parents or guardians were instructed to sign and mail the informed statement of consent back to the school in the self-addressed stamped envelope by February 1, 2006 if they consented to their child's participation in the study.

Prior to administering the survey, the researcher met with the principal to sort through the returned signed consent forms. This allowed the researcher to determine which students would be selected to participate in the study.

In February 2006, the researcher met with the sixth graders to administer the survey only to students with returned signed consent forms. In order to maintain confidentiality, students whose parents or guardians did not consent to participate in the study were given a class activity at the same time the survey was administered to the subjects. The principal handed out the surveys and class activities while the researcher provided oral instructions to the subjects. A total of 42 surveys were collected on the same day by the researcher.

Data Analysis

Data coding and analyses were performed by a research and statistical consultant at UW-Stout. All surveys were coded and responses statistically analyzed using the computer program, Statistical Package for the Social Sciences (SPSS) for Windows. The number of useable surveys for boys and girls were 19 and 23, respectively.

The survey items were assessed using descriptive statistics including frequencies, means, standard deviations, and percentages. Cross tabulations were computed to compare the boys' and girls' responses to the number of times they consumed milk, soda pop, vegetables, fruit, sweets, chips or other salty snack foods, and fast food. Finally, a t-test was done to determine if food use of the boys and girls were statistically different from one another. The p level for significance was set at .05 and therefore anything less than .05 was considered significant.

Limitations

There were some limitations in the methodology. First, the instrument had no measures of validity or reliability because the survey was designed specifically for this study. Second, only one school district was included in this study, therefore the results may only be generalized to school districts with sixth grade classes of comparable size. The results cannot be generalized to all sixth graders in the nation due to sampling limitations and the small sample size. Third, this study only included sixth graders and not the other grade levels at the middle school. Therefore results cannot be generalized to all of the students at

the middle school. Finally, the survey was not test piloted. Test piloting the survey would have improved the clarity of the survey content.

Chapter IV: Results

Introduction

This chapter includes findings of this study. Demographic information and item analyses are discussed. The chapter concludes with the findings for the research objectives of the study.

Demographic Information

There were 87 letters and statements of informed consent sent out to the parents and guardians of the sixth graders at Arkansaw Middle School at the end of January 2006. Even though there were a total of 74 students (39 boys and 35 girls), additional letters were sent out as there was more than one address for some of the students. Forty-seven signed statements of informed consent were returned. This constituted a 64% response rate. On the day that the survey was administered, only 42 surveys were completed by the participants and collected by the researcher. Five students having parental consent to participate were absent on the day the surveys were administered.

Of the 42 participants (n=42), 19 were boys (45.2%) and 23 were girls (54.8%). Table 3 summarizes the gender breakdown of the participants. All of the students were in the sixth grade. Information on exact age of the subjects was not collected. Given their grade level, it would be expected that the participants were approximately 11 and 12 years old.

Table 3

Gender Distribution of Respondents (N=42)

Gender	Number (n)	Percentage (%)
Boy	19	45.2
Girl	23	54.8

Milk Consumption

The first item on the survey asked participants to indicate the number of times (0-5) that they drank milk on the previous day. The results are summarized in Table 4 for all participants in the study. The majority (64.3%) of the participants drank milk 3 or more times a day. Very few (7.1%) did not drink milk, and the remaining participants (28.6%) reported drinking milk either once or twice a day.

Table 4

Frequency of Daily Milk Consumption (N=42)

Number of Times	Number (n)	Percentage (%)
0	3	7.1
1	6	14.3
2	6	14.3
3	11	26.3
4	8	19
5	8	19

The data was examined according to gender and is demonstrated in Figure 1. Of the 19 boys, 13 reported drinking milk three or more times a day. Most boys (5 participants) reported drinking milk five times a day, and 2 boys did not drink any milk. Among the 23 girls, 7 reported drinking milk three times a day, which was the most frequent time reported; while one time a day was the second most frequent time girls drank milk (5 participants). One girl drank no milk during the day and the remaining girls reported drinking milk 2, 4, or 5 times a day. No significant differences were found in the frequency of milk intake for boys and girls.

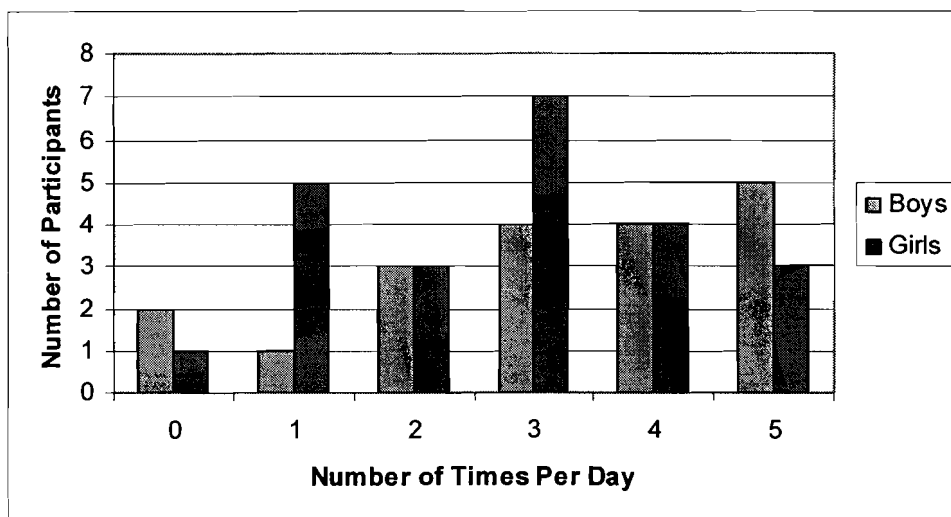


Figure 1. Milk consumption of boys (n=19) and girls (n=23).

Soda Pop Consumption

The survey asked participants to indicate the number of times (0-5) that they drank soda pop on the previous day. The results are summarized in Table 5 for all participants. The majority of the participants (66.7%) reported either not drinking soda pop or drinking soda 1 time per day. Two times per day was the

third most frequent time that participants drank soda pop. The remaining participants (9.5%) reported drinking soda pop either 3 or 5 times a day.

Table 5

Frequency of Daily Soda Pop Consumption (N=41)

Number of Times	Number (n)	Percentage (%)
0	15	35.7
1	13	31
2	9	21.4
3	1	2.4
4	0	0
5	3	7.1

When the data was examined according to gender (Figure 2), boys most frequently drank soda pop 1 time per day (8 participants). Never drinking soda pop during the day was the second most frequent response reported by boys (6 participants). The remaining boys (4 participants) reported drinking soda pop 2, 3 or 5 times a day. Among the girls, most reported never drinking soda pop (9 participants). Drinking soda pop 2 times a day (8 participants) and once a day (5 participants) were the second and third most frequent times girls reported, respectively. The remaining-girl reported drinking soda pop 5 times per day. No significant differences were found between boys and girls in the frequency of soda pop intake.

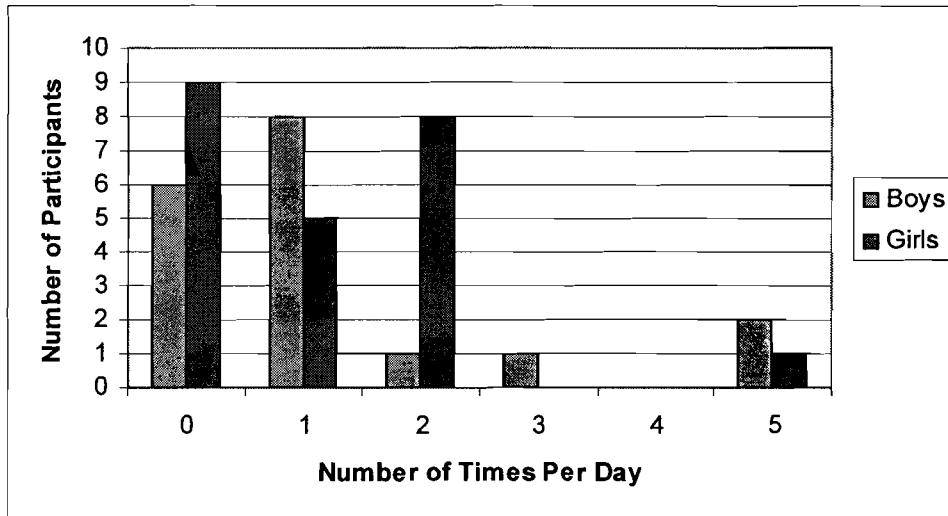


Figure 2. Soda pop consumption of boys (n=18) and girls (n=23).

Vegetable Consumption

The third item on the survey asked participants to indicate the number of times (0-5) that they ate vegetables on the previous day. Data for all subjects (Table 6) show that most of the subjects (42.9%) ate vegetables 1 time a day. Two and three times a day were the second and third most frequent times all participants ate vegetables (23.8 and 21.4%, respectively). Two participants reported not eating any vegetables, and 3 participants ate vegetables four times a day, the highest number of times reported.

Table 6

Frequency of Daily Vegetable Consumption (N=42)

Number of Times	Number (n)	Percentage (%)
0	2	4.8
1	18	42.9
2	10	23.8
3	9	21.4
4	3	7.1
5	0	0

The frequency of vegetable consumption was examined and compared for boys and girls. The results are shown in Figure 3. Most boys (10 participants) reported eating vegetables 1 time per day, followed by 3 times a day (4 participants) and then twice a day (3 participants). One boy did not eat vegetables and one ate a high of 4 times a day. Among the girls, most consumed vegetables 1 time a day (8 participants), followed by 2 times per day (7 participants), and then 3 times a day (5 participants). One girl reported consuming no vegetables during the day and the remaining two girls ate vegetables 4 times a day, the highest frequency reported. No significant differences were found in the frequency of vegetable intake between boys and girls.

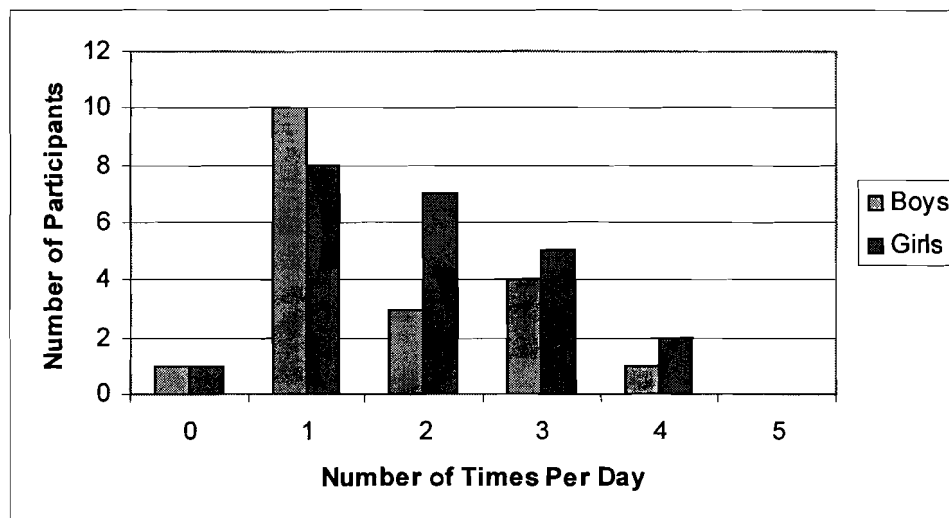


Figure 3. Vegetable consumption of boys (n=19) and girls (n=23).

Fruit Consumption

The survey asked participants to indicate the number of times (0-5) that they ate fruit on the previous day. The results are summarized in Table 7 for all participants. The majority of all participants (59.5%) reported never eating fruit during the day or eating fruit 1 time. Seven participants reported eating fruit twice a day. Only 10 participants reported eating fruit 3 or more times a day.

Table 7

Frequency of Daily Fruit Consumption (N=42)

Number of Times	Number (n)	Percentage (%)
0	11	26.2
1	14	33.3
2	7	16.7
3	3	7.1
4	5	11.9
5	2	4.8

The data for fruit consumption was examined according to gender and is demonstrated in Figure 4. Most of the boys (13 participants) never ate fruit during the day or consumed fruit 1 time per day. Only four boys reported eating fruit twice or 3 times a day. The remaining two boys ate fruit either 4 or 5 times a day. Among the girls, most (8 participants) reported eating fruit 1 time a day. Two times per day was the second most frequent time that girls ate fruit. Four girls ate no fruit and an equal number ate fruit 4 times a day. No significant differences were found between boys and girls in the frequency of fruit intake.

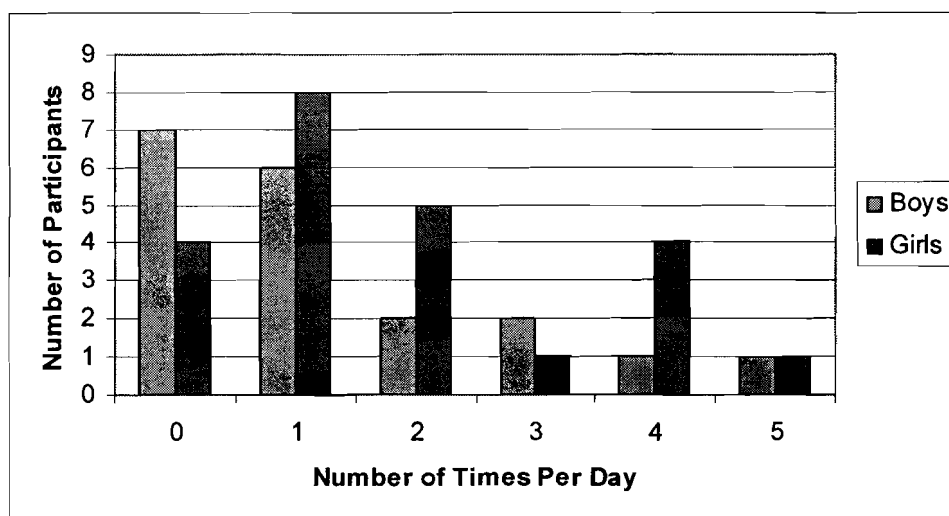


Figure 4. Fruit consumption of boys (n=19) and girls (n=23).

Sweet Foods and Candy Consumption

The fifth item on the survey asked participants to indicate the number of times (0-5) on the previous day that they ate sweets such as candy, cake, cookies, brownies, or donuts. The results are summarized in Table 8 for all participants. The majority of the students (54.8%) ate sweets 1 or 2 times per day. Never eating sweets was the third most frequent response reported by all participants. A few (10 participants) reported eating sweets 3, 4 or 5 times a day.

Table 8

Frequency of Daily Sweet Food and Candy Consumption (N=41)

Number of Times	Number (n)	Percentage (%)
0	8	19
1	11	26.2
2	12	28.6
3	3	7.1
4	4	9.5
5	3	7.1

The frequency of sweet food and candy consumption was examined and compared by gender. The results are shown in Figure 5. Most of the boys (6 participants) reported eating sweets 2 times per day. Not eating any sweets during the day was the second most frequent response (4 participants), followed by eating sweets once a day (3 participants) and 4 times a day (3 participants). Among the girls, most (8 participants) consumed sweets 1 time per day. Two times per day was the second most frequent time that girls ate sweets. Four girls reported eating no sweets during the day. No significant differences were found between the frequency of intake of sweet foods and candy for boys and girls.

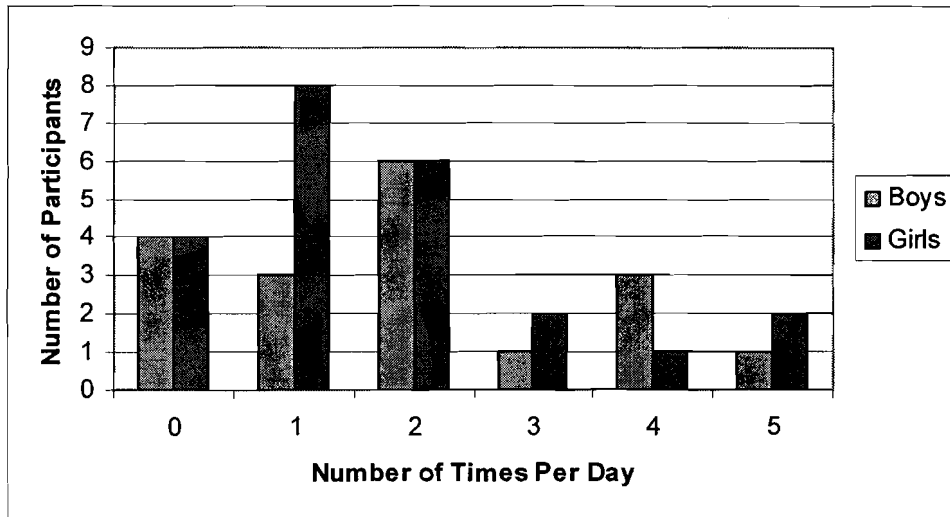


Figure 5. Sweet food and candy consumption of boys (n=18) and girls (n=23).

Salty Snack Food Consumption

The survey asked participants to indicate the number of times (0-5) that they ate chips or other salty snacks like Doritos, Cheetos, or potato chips during the previous day. The results are summarized in Table 9. Most of the participants (69%) reported never eating a salty snack food or eating a salty snack food 1 time. Three times was the third most frequent time that participants ate a salty snack food. Only two (4.8%) of the participants ate a salty snack food 4 or 5 times per day.

Table 9

Frequency of Daily Salty Snack Food Consumption (N=42)

Number of Times	Number (n)	Percentage (%)
0	14	33.3
1	15	35.7
2	4	9.5
3	7	16.7
4	1	2.4
5	1	2.4

The data for salty snack food consumption was examined according to gender and is demonstrated in Figure 6. A significant difference ($p < .05$) was found due to gender in the frequency of salty food intakes. Most of the boys (7 participants) reported eating a salty snack food 3 times a day. One time was the second most frequent time that boys ate a salty snack food (6 participants). No boys reported eating salty foods more than 3 times a day. Only 3 boys reported never eating salty snack foods during the day. On the other hand, among the girls, most reported never eating a salty snack food (11 participants). One time per day was the second most frequent time that girls ate a salty snack food (9 participants). The remaining 3 girls reported eating a salty snack food 2, 4, or 5 times a day.

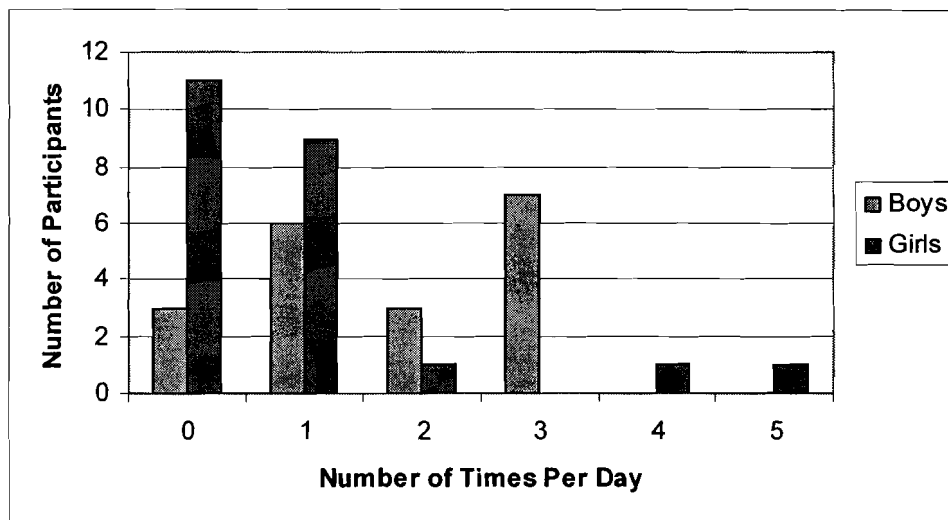


Figure 6. Salty snack food consumption of boys (n=19) and girls (n=23). Significant differences found at $p < .05$ level.

Fast Food Consumption

The seventh, and final, item on the survey asked participants to indicate the number of times (0-5) that they ate fast food on the previous day. The results are summarized in Table 10 for all participants. Overwhelmingly, the majority of the participants (81%) reported never eating fast food during the day. One time per day was the second most frequent time that the participants ate fast food. One participant reported eating fast food twice a day, and the remaining two participants reported eating fast food 5 times a day.

Table 10

Frequency of Daily Fast Food Consumption (N=42)

Number of Times	Number (n)	Percentage (%)
0	34	81
1	5	11.9
2	1	2.4
3	0	0
4	0	0
5	2	4.8

When fast food consumption was examined and compared by gender (Figure 7), data show that most of the boys (14 participants) reported never eating fast food during the day. One time per day was the second most frequent time that boys ate fast food (4 participants). Only one boy reported eating fast food more than once a day. Like the boys, most of the girls (20 participants) reported never consuming fast food. Only 3 girls reported eating fast food 1 or more times per day. No significant differences were found between boys and girls in the frequency of fast food intake.

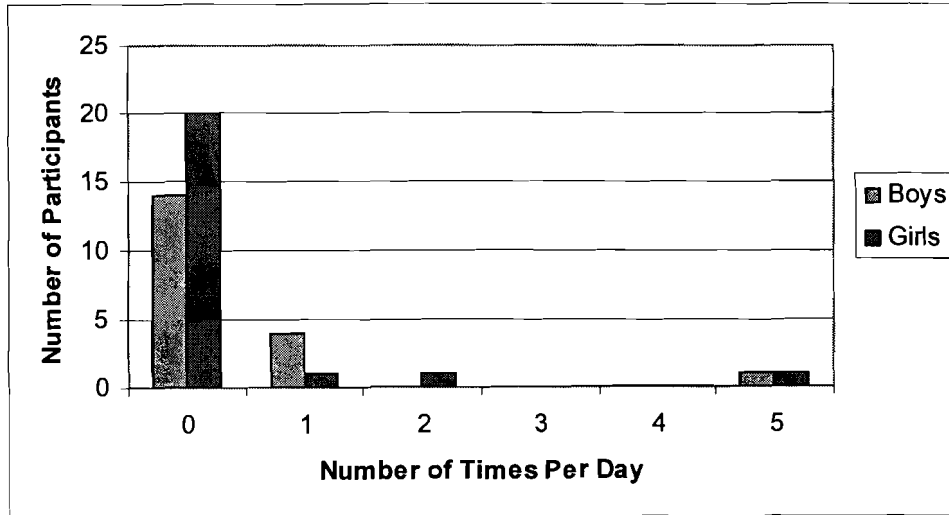


Figure 7. Fast food consumption of boys (n=19) and girls (n=23).

Research Objective

Research Objective - The overall objective of this study was to examine the food habits of sixth graders by determining the frequency of daily intake of milk, soda pop, vegetables, fruit (not including juice), sweets, chips or salty snack foods, and fast foods within a 24-hour time period and by determining the food use of boys and girls. Survey items 1 through 7 dealt with this objective. Descriptive statistics including frequencies and percentages were used to determine the daily consumption of milk, soda pop, vegetables, fruit (not including fruit juice), sweets, chips or salty snack foods, and fast foods. Cross tabulations provided frequencies and percentages to compare the survey items to boys and girls. There was a significant difference found between the number of times boys and girls consumed chips or other salty snacks ($p < .05$). This finding suggests that boys and girls in the sixth grade class eat similarly with the exception of chips or other salty snacks.

Chapter V: Discussion

Introduction

This chapter includes a discussion comparing and contrasting the results of this study with results of relevant previous studies. Conclusions were formed to summarize the results of the study. Finally, recommendations were made.

Discussion

This study found that boys and girls in the sixth grade at Arkansaw Middle School have similar eating habits of milk, soda pop, vegetables, fruit, sweet foods, and fast food. The students' eating habits of chips and other salty snacks differ significantly.

In this study, overall, the majority of the subjects reported drinking milk 3 times per day. Over one-third of the subjects reported drinking milk 4 to 5 times and only 3 subjects never reported drinking milk. Although amount of milk consumed was not asked, if the students did drink at least one cup per time, then it could be assumed that the majority of the students would have met the current recommendation for daily milk product consumption of at least 3 cups according to the Dietary Guidelines for Americans. In this study, a greater percentage of boys than girls reported drinking milk 3 or more times per day, although differences were statistically insignificant.

In this study, the number of times that soda pop was consumed was much lower than expected. Forshee and Storey (2003) demonstrated that while milk consumption decreased, carbonated soft drink consumption increased in 12- to 19-year-olds. This study found the opposite results. Based on recalls for the

previous 24-hour period, the majority of the students in this study reported never consuming soda pop or drinking soda pop 1 time per day. The next most popular response was 2 times, while 3 or more times a day was rarely reported. A higher percentage of boys reported drinking soda at least one time a day in comparison to the girls, but this difference was not statistically significant. Similarly, Enns, Mickle, and Goldman (2003) found that a higher percentage of adolescent boys aged 12 to 19 consumed soft drinks in comparison to girls of the same age. Davy et al. (2004) also reported that soft drink consumption was slightly higher in middle school aged boys.

Results for vegetable and fruit consumption revealed that most participants ate these foods only once a day. However the use of vegetables and fruits appeared to differ somewhat among the participants. It appears that students ate vegetables more often than they did fruit. Eighty-eight percent of the students reported consuming vegetables at least three times a day. In comparison, only 57% of students in this study reported consuming fruit at least three times, and 50% consumed fruits at least twice a day. These differences were not statistically significant. Lytle et al. (2000), Neumark-Sztainer et al. (2002), and Granner et al. (2004) also reported no statistical significant differences in boys and girls of similar age for fruit and vegetable intake. Because amounts of fruits and vegetables consumed were not determined, this study provides no data on whether or not the subjects met the current recommendations for daily fruit and vegetable consumption.

Overall, the majority of the subjects reported eating a sweet food such as candy, cake, cookies, brownie, or donut 1 or 2 times a day. About a quarter of the students ate a sweet food 3 or more times a day. To some extent, a greater percentage of girls reported eating a sweet at least 1 time per day in comparison to the boys, but this difference was statistically insignificant.

In this study, chips or other salty snacks were not consumed very often. In fact, the majority of the subjects reported not eating a salty snack food or eating these foods only once during a previous 24-hour period. Boys ate chips or other salty snack foods more often than the girls did and this result was statistically significant. Nielsen, Siega-Riz, and Popkin (2002) reported an increase in salty snacks and candy from 1977 to 1996, but, unlike this study, differences in gender were very small and not reported.

When analyzing the number of times that fast food was eaten, clearly, the majority of the students did not eat fast food. Only eight (about 19%) of the students reported eating fast food 1 or more times a day. In contrast, Bowman et al. (2004) reported that on a typical day, 30.3% of 4- to 19-year-olds consume fast food. Previous studies report the percentage of boys and girls eating fast food but not necessarily the number of times that fast food was consumed in a day. A greater percentage of boys than girls (26% vs. 13%, respectively) reported eating fast food one or more times a day, but this difference was not statistically significant. Bowman et al. (2004) demonstrated that more boys than girls reported eating fast food and French et al. (2001) found that more girls than boys reported never visiting a fast food restaurant in a week. It seemed

somewhat unusual that two subjects reported eating fast food 5 times a day, especially if they attended school on the day before the survey was administered in this study (which was a weekday). There is a possibility that these students interpreted fast food as food other than food eaten at a fast food restaurant.

Conclusions

In this study, overall the boys and girls had similar food habits for consumption of milk, soda pop, vegetables, fruit, sweets, and fast food. The boys significantly consumed salty snack foods more times a day than the girls did. The small sample size, involvement of only students in the sixth grade, and the geographical location limit the generalization of these findings to other populations of middle school aged students. The sample of this study was, however, representative of the whole class at the cooperating middle school as the ratio of boys and girls who participated was similar to the ratio of boys and girls in the entire sixth grade class.

The objective of the study was met.

Objective: To examine the food habits of sixth graders by a determination of the daily consumption of milk, soda pop, vegetables, fruit (not including juice), sweets, chips or salty snack foods, and fast foods within a 24-hour time period and by determining the food use of boys and girls.

Outcome: Frequencies for the number of times that boys and girls consumed milk, soda pop, vegetables, fruit, sweets, chips or salty snack foods, and fast foods daily were determined and then compared to one another. The

only statistical difference found between boys and girls was for their frequency of consumption of chips or other salty snacks.

The conclusions drawn from this study are of benefit to different groups. First, the middle school involved in the study can use the results as it develops and finalizes its plans for the federally mandated local wellness plan, which is to be implemented in the school year 2006-2007. Second, nutrition professionals and other public health nutrition educators can use the results when developing future nutrition education plans. If the rates of childhood overweight and obesity are to be decreased, then it is helpful that children understand and follow good nutrition habits.

Recommendations

Several recommendations can be made as a result of conducting this study. First, a larger sample size would have been most advantageous. This would have allowed some generalizability of the results. Second, further studies could be done to determine the quantity of the targeted foods consumed because most of the previous related studies discuss quantities of foods consumed rather than frequencies. Frequencies are helpful in understanding food habits, but quantities are more precise information on food intakes. For instance, in this study, a student who answered that he or she ate a food 3 times a day could have eaten less of the particular food than a subject who answered 1 time to the same question. Third, it would have been helpful to define fast food on the survey because students may have interpreted the meaning of fast food differently. Fourth, subjects' responses may have been more accurate had they

been individually interviewed. It may have been difficult for the students to remember what they ate on the day before the survey was administered, but perhaps having someone there to prompt the subject for answers would have been helpful. This procedure, obviously, would have required a lot more time to complete the surveys.

The frequency of consumption of foods selected in this study provides information on the use of foods, such as fruits and vegetables, which are encouraged in the diets and lower the risk of common chronic diseases in the American population. The use of foods such as sweets, fast foods, chips or salty snack foods provides information on consumption practices associated with the risk of obesity and other chronic diseases. Understanding the use of these foods among children and adolescents is an important step in developing plans for promoting healthful eating habits and lowering the risk of chronic disease in childhood and adolescence, and in later life.

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Appendix A

Letter and Statement of Informed Consent

January 25, 2006

Dear Parent or Guardian,

My name is Mary Jo Brunner and I am a graduate student in the Food & Nutritional Sciences program at the University of Wisconsin-Stout. I am working on a research project that involves food habits of middle school aged students. Your child's 6th grade class has the opportunity to participate in a study called "A Comparison of Food Habits of Middle School Students." The objective of the study is to investigate the food habits of sixth grade boys and girls by a determination of the daily use of specific beverages and foods within a 24-hour time period and by comparing the food use of boys and girls. I am asking for your permission for your child to be included in the study. Mrs. Lund and the school district superintendent are fully supportive of this project and strongly encourage your child's participation.

In February 2006, a very brief survey containing 8 items will be handed out to the students at school. It will take no more than 5 minutes to fill out. The survey will first ask the students to indicate their gender and then will follow with a question asking the students to think of what they ate yesterday. They will indicate the number of times that they ate or drank milk, soda pop, vegetables, fruit, sweets, chips, and fast food.

No risks are anticipated for participating in this study. The questions asked do not deal with feelings or other sensitive issues. Also, there will be no specific risk to your child as there will not be any way to identify who filled out each survey. Students will be instructed to not write their name on the survey. Participation is entirely voluntary and the students do have the right to withdraw at any time. Students will not be penalized if they do not participate. For any child who is not permitted to participate or who chooses to not participate, the teacher will not hand a survey to him or her, but instead will receive a separate class activity. This way all students will have a piece of paper and those who are not participating cannot be singled out. The results from this study can benefit Arkansaw Middle School. The findings can help direct the future of nutrition education programs and topics to help children make healthy food choices.

This study has been reviewed and approved by The University of Wisconsin-Stout's Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and university policies. If you have questions or concerns regarding this study please contact the investigator, Mary Jo Brunner, at (715) 552-5366, brunnerm@uwstout.edu or her advisor, Dr. Esther Fahm, at (715) 232-2550, fahme@uwstout.edu. If you have any questions or concerns regarding your child's rights as a research subject, please contact the IRB Administrator, Sue Foxwell, at 152 Vocational Rehabilitation Bldg., UW-Stout Institutional Review Board, Menomonie, WI 54751, (715) 232-2477, foxwells@uwstout.edu.

If you would like your child to participate in this study, **please sign the attached “Statement of Informed Consent” form and return it in the self-addressed stamped envelope by February 1, 2006**. If you do not want your child to participate, you do not need to sign or return the consent form. Thank you very much for your time and support!

Sincerely,

Mary Jo Brunner

Statement of Informed Consent

University of Wisconsin-Stout: "A Comparison of Food Habits of Middle School Students"

I have read the letter to parents or guardians informing me of the study to be conducted at the middle school on sixth grade students. I understand the nature of the type of information that will be gathered on my child. I further understand that my child's participation in this study is strictly voluntary and that he or she may withdraw his or her participation at any time without being penalized. By signing this informed consent statement form, I agree for my child to participate in the project entitled, "A Comparison of Food Habits of Middle School Students." Please mail this form back to the middle school in the self-addressed stamped envelope by February 1, 2006.

Sixth grade student's name (please print)

Signature of parent or guardian

Date

Appendix B
Survey

This research has been approved by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.

Sixth Graders' Food Habits Survey Arkansaw Middle School

Please do NOT write your name on this form. Try to answer each question as best as you possibly can. There are no wrong answers. When you are finished, give it to your teacher.

I am a: _____ boy
 _____ girl

Try to think of what you ate yesterday only. Please circle the number of times (0-5) that you ate or drank the following.

	<u>Number of Times</u>					
A. drank milk	0	1	2	3	4	5
B. drank soda pop	0	1	2	3	4	5
C. ate vegetables	0	1	2	3	4	5
D. ate fruit (do not include juice)	0	1	2	3	4	5
E. ate a sweet such as candy, cake, cookies, brownie, donut	0	1	2	3	4	5
F. ate chips or other salty snack such as Doritos, Cheetos, potato chips	0	1	2	3	4	5
G. ate fast food	0	1	2	3	4	5

Thank you for participating!