
National Food Service Management Institute
The University of Mississippi
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National Food Service Management Institute
The University of Mississippi

Building the Future Through Child Nutrition

The National Food Service Management Institute was authorized by Congress in 1989 and established in 1990 at The University of Mississippi in Oxford. The Institute operates under a grant agreement with the United States Department of Agriculture, Food and Nutrition Service.

PURPOSE
The purpose of NFSMI is to improve the operation of Child Nutrition Programs through research, education and training, and information dissemination. The Administrative Offices and Divisions of Information Services and Education and Training are located in Oxford. The Division of Applied Research is located at The University of Southern Mississippi in Hattiesburg.

MISSION
The mission of the NFSMI is to provide information and services that promote the continuous improvement of Child Nutrition Programs.

VISION
The vision of the NFSMI is to be the leader in providing education, research, and resources to promote excellence in Child Nutrition Programs.

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INTRODUCTION

There is a significant amount of research conducted by graduate students in fulfillment of requirements for a graduate degree program. This collection of dissertations and theses written after 2008 was compiled based on these submissions from college and university graduate students and faculty. All sources included herein address the field of child nutrition, both in terms of child nutrition programs within the schools and in terms of factors that might affect school-aged children outside of the school setting. Sources were retrieved via ProQuest’s Dissertations and Theses (D&T) online database, a service to which any institution of higher learning may subscribe, using an extensive list of keywords and phrases. (See Table 1.) Once sources were retrieved, they were reviewed for relevance by the National Food Service Management Institute, Applied Research Division (NFSMI, ARD) researchers and were then clustered under 23 main topic areas. An author index is also included at the end of the document for easy reference.

ProQuest subscribers are allowed online access to citations and abstracts for every title within the database. Copies of the dissertations and theses found in this document can be ordered through an interlibrary loan at most colleges and universities or through a ProQuest subscription available at http://www.proquest.com.
<table>
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<th>Annotated Bibliography Research Keyword and Key Phrase List</th>
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<td>2. Administrative</td>
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<td>3. Adult day care</td>
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<td>4. After school feeding</td>
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<td>5. Allergy</td>
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<td>8. Cafeteria</td>
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<td>10. Competencies, knowledge, and skills</td>
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<td>13. Competitive foods</td>
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<td>15. Customer service</td>
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<td>17. Dietary guidelines for Americans 2005</td>
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<td>18. Dietetic internship</td>
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<td>21. EFNEP</td>
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<td>22. Emergency preparedness</td>
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<td>23. Employee professional development</td>
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<td>24. Employee training</td>
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<td>25. Energy (utility issues)</td>
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<td>26. Environmental management</td>
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<td>27. Expanded food and nutrition education program</td>
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<td>28. Facility layout/facility design</td>
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<td>29. Farm to school</td>
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<td>30. Financial management</td>
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<td>31. Fresh fruit and vegetable program (FFVP)</td>
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<td>39. Green environmental conservation</td>
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<td>40. Green initiatives</td>
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<td>41. H1N1 Swine flu</td>
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<td>42. Hazard Analysis Critical Control Points (HACCP)</td>
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<td>43. Healthy Meal choices in school nutrition setting/program</td>
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<td>44. Human resource management</td>
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<td>45. Job functions (school nutrition directors/managers/staff)</td>
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Table 1
Once sources were retrieved, they were reviewed for relevance by NFSMI, ARD researchers, and were then clustered under main topic areas, a list which may be examined by looking at the table of contents. Since the main topic areas are determined by the content of current unpublished dissertations and theses, the topics change with each new annotated bibliography. The topics “Nutrition Standards” and “School Lunch History,” appear to have no active research being conducted presently, and were omitted. However, many new topics have emerged to reflect current trends: “Body Image,” “Breakfast,” “Childcare & Daycare Centers,” “Child Nutrition Programs,” “Competitive Foods,” “Farm to School,” “Food Safety,” “Fresh Fruits/Whole Grains,” “Home, Family, Caregivers,” “Multicultural Food & Nutrition Issues,” and “Overweight/Obesity.” Though the initial intent of assembling this collection was to provide a central resource for recent scholarship, it would appear that a secondary result is that, by noting the flux of category addition, category omission, and volume of content within each category, one may take note of the evolution of trends within the field of child nutrition.
BODY IMAGE


The goal of this study was to determine which variable (mother, father, peers, or media) had the greatest positive and negative influence on male and female adolescents. For one week, 14 females and seven males were surveyed. The hypothesis stated parents would have the greatest positive influence on both genders, and media would have the greatest negative influence on both genders. Data were analyzed using descriptive statistics. Both genders reported mothers to be the largest positive influence. Males reported their peers to be the greatest negative influence, and females reported the media to be the greatest negative influence. Results from this research should be used by schools and other professionals in the health education system to create programs that address concerns regarding body image and the influencing factors on body image for adolescent males and females.


SHAPEDOWN® is a multidisciplinary approach to weight management for children and adolescents aged 6-18 years old, and focuses on encouraging healthy eating and improving self-esteem instead of emphasizing weight loss and dieting. The purpose of this study was to see the overall effect of participation in the program on weight and body image. A secondary objective was to examine the relationship between program participation and weight, body mass index (BMI), body fat percentage, physical fitness, body image, and body image specifically in relation to weight loss or change in BMI. Eligibility for this study was participation in the ten-week SHAPEDOWN® program. Of the 25 participants, there were five (20%) males and 20 (80%) females. Data was collected at week 1 and week 10. Participants were found to have significant improvements in BMI, weight, arm and waist circumference, and sit-up tests. Body image change in relationship to weight loss or change in BMI was not found to be significant. Study results support the effect of the SHAPEDOWN® program on weight and BMI, but no significant effect on body image was found.

The study had three purposes. The first was to determine if there were an association between the frequency of eating breakfast and body mass index (BMI) in children. The second purpose was to determine if there were an association between the frequency of eating ready-to-eat cereal (RTEC) and BMI in children. The third was to determine if there were an association between the frequency of eating RTEC and nutrient intakes of calcium, magnesium, iron, vitamin A, vitamin C, and fiber in children. Study participants were 624 students; 78.2% were Hispanic, 11.9% were African American, 6.1% were White, and 3.8% were other ethnicities. These participants were interviewed at three points in time that were at the beginning of their fourth grade year, and then at the end of their fifth and sixth grade years.

No significant association between the frequency of breakfast and BMI was found. Among fourth-grade students, the frequency of RTEC consumption was a significant predictor of BMI, and the intakes of calcium, magnesium, iron and vitamin C (p<.00625). Among fifth-grade students, the frequency of RTEC consumption was a significant predictor of intakes of calcium, magnesium, iron, vitamin A and vitamin C (p<.00625). Among sixth-grade students, the frequency of RTEC consumption was a significant predictor of calcium, magnesium and iron (p<.00625).


This study evaluated the feasibility and acceptability of the intervention program, *Skip to Breakfast*. *Skip to Breakfast* is a behaviorally based school and family program created to increase consistent and healthful breakfast consumption among ethnically diverse fifth grade students and their families, using Intervention Mapping(TM). A pilot-test of the intervention was conducted in one classroom, in a school in Houston, during the fall 2007 semester. Sixteen students and six parents participated in the study. Four classroom lessons and four parent newsletters were used to deliver the intervention. A qualitative evaluation included focus groups with students, phone interviews of parents, process evaluation data from the classroom teacher, and direct observation. Results showed high acceptability among the teacher, students, and parents. Changes were made to the intervention and program based on participant feedback. The main trial will be in spring 2008, in two elementary schools, and use four fifth-grade classes from each, with one school as the control and one as the intervention school.

This study investigated existing Canadian and Toronto District School Board (TDSB) nutrition programs, and tested the hypothesis that a universally accessible school-based breakfast program could encourage adolescents to make healthier food choices at other meals. This study used qualitative focus group methodology involving the participation of adolescent students who are members of school breakfast programs at three TDSB schools, to determine that the school-based breakfast program can promote healthier food choices. This study also found that adolescents made healthier food choices at other meals if a breakfast program is effectively designed, implemented, and operated as part of a larger nutrition education effort. The findings of this study recommend collaboration between school and home, because parental involvement could possibly enhance operational success for school-based breakfast, and parents could increase their understanding and awareness of good nutrition.

CHILDCARE & DAYCARE CENTERS


The purpose of this study was to determine whether the dietary intake of children enrolled in Head Start programs differed from children not attending preschool or children in non-Head Start programs. Cross-sectional data was analyzed for low-income children 3-5 years of age who participated in the National Health and Nutrition Examination Survey between 1999 and 2004 (N=950). Children were classified into Head Start, non-Head Start, past preschool, and never preschool groups. Overall, a large percentage of children reported not meeting the RDA for folate (20.5%), vitamin A (39.7%), vitamin E (79.7%), calcium (40.2%), iron (28.8%), and potassium (90.8%). Head Start children reported lower mean protein, saturated fat, thiamin, riboflavin, niacin, calcium, phosphorous, iron, and selenium intakes, although in many cases these differences were not statistically significant. The greatest differences in intake were observed between Head Start and never preschool children. Multivariable analyses demonstrated an association between Head Start and a higher risk of inadequate intake of protein, thiamin, riboflavin, niacin, vitamin B12, calcium, magnesium, zinc, copper, and selenium. The study concludes that children in Head Start programs appear to be at greater risk for not meeting the RDA for several key vitamins and minerals.

This study evaluated policies and practices, menus, and dietary intakes of 240 preschool-aged children who attended group daycare centers in Manhattan and three surrounding boroughs of New York City (NYC). Data about nutrition policies and practices were collected from 40 daycare centers, and copies of current menus were also collected. Observations of foods eaten at breakfast, mid-morning snack, and lunch were conducted in classrooms at the daycare centers. A Household Survey was administered to 200 primary caregivers of preschool-aged children at 16 centers to collect data about food behaviors and children's intakes at home. Results showed that nutrition policies and practices of most daycare centers met nutrition requirements mandated by New York State and NYC. Daycare menus generally complied with current national recommendations and offered food that was more healthful than food provided at home. Children at home were less likely to consume healthful foods, such as fruits and vegetables, if primary caregivers reported that they never purchased those foods. Children were more likely to consume unhealthful foods if primary caregivers reported that they ate meals from fast food or other restaurants ≥1 times/week or ate foods while watching television. Study findings suggest the need for policy evaluation, nutrition education, and health interventions to ensure that daycare centers and home environments support healthful dietary practices during early childhood.


The purpose of this study was to examine whether Color Me Healthy (CMH), an interactive nutrition program designed for preschool-aged children in child care settings, increases the consumption of fruit and vegetables. Child care centers were randomly assigned to one of two conditions; children (n=165) in ten centers received CMH and children (n=98) in seven centers acted as controls. Fruit and vegetable snack consumption was assessed at baseline, one week post-intervention, and at three months post-intervention. Children who were exposed to the CMH program consumed significantly more fruit and vegetable snacks at post-intervention assessments. This suggests that CMH may be used to develop healthy eating habits in child care settings.


This study investigated the effects of Head Start participation in the year prior to kindergarten on child outcomes from kindergarten to elementary school years, and examined whether the effects, if any, vary by participants' race/ethnicity, English speaking at home, or gender. Multiple analytic approaches were used, including propensity score matching, fixed effects, and multivariate regressions, and used data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K). This dissertation includes three papers focusing on
different aspects of participants' outcomes: test scores, childhood overweight and obesity, and social-emotional development. Overall, when compared to non-parental non-center-based care, Head Start lifts children's test scores in math and reading, reduces their risk of overweight/obesity through the third and fifth grade years, and increases children's externalizing problem behaviors in kindergarten. When compared to other center-based care, Head Start is less likely to increase children's test scores in kindergarten, more likely to reduce the risk of childhood overweight, obesity, and problem behaviors, and more likely to increase children's self-control ability and interpersonal skills. Compared to multiple non-parental care arrangements, Head Start increases children's test scores, approaches to learning, self-control, and interpersonal skills and reduces their risk of overweight/obesity, and externalizing problem behaviors. In conclusion, little evidence was found to suggest that the effects of Head Start vary significantly by child race/ethnicity, English speaking at home, or gender.

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CHILD NUTRITION PROGRAMS

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The purpose of this research was to survey school child nutrition program (CNP) directors of medium-size public school districts (enrollments between 2,500 and 10,000) to determine the following: to investigate management and financial attributes perceived by these directors to impact performance measures for CNPs, and to investigate whether widely used standards for these performance measures, based on previous research, were relevant due to a variety of changes that had occurred in CNPs. Two electronic questionnaires were sent to 2,534 foodservice directors. Respondents (*n* = 740) assessed attitudes about and use of productivity measures in their programs, use of convenience foods and disposable student-use items, factors that affect meals per labor hour (MPLH), director's demographic information, and district characteristics. A convenience sample (*n* = 34) of foodservice directors provided detailed information about revenues, expenses, participation, and staffing. This information was used to calculate current MPLH for onsite kitchens, production kitchens serving more than one site, and satellite sites and revenue per dollar expense.

Foodservice directors rated the importance of 32 performance measures in evaluating their programs, and the directors indicated frequency of use of these measures. These performance measures were grouped into nine factors: financial data (*M* = 4.9), financial statements (*M* = 4.8), food cost (*M* = 4.7), participation data (*M* = 4.7), meal cost (*M* = 4.7), productivity ratios (*M* = 4.5), accounting data (*M* = 4.5), operating ratios (*M* = 4.4), and inventory data (*M* = 4.3). MPLH was the most frequently used productivity ratio. Male foodservice directors who worked for contract management companies used financial data more frequently than did female directors, whereas female foodservice directors who worked in self-operated programs used productivity performance measures more than did male directors. Directors perceived onsite supervisor's
effectiveness and experience highly influenced the kitchen's productivity. Findings from this study indicate the need for school foodservice directors to use two separate tools, one for kitchen productivity and one for overall financial profitability, in managing their programs.

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**FARM TO SCHOOL**


This research study explored the potential of farm to school programs in public K-12 schools in the United States to improve children's diets and to provide farmers with viable market opportunities. A case study approach was used to examine why farmers, food service professionals, and food distributors participate in farm to school programs and to explore how they characterize the opportunities and challenges of local school food procurement. The focus of this research was on efforts to integrate locally grown food into seven school food programs in the Upper Midwest and Northeast regions of the United States. Qualitative interviews were used as the primary data collection strategy. Procurement records, menus, and other relevant documents also were collected and examined in order to cross-check findings and enhance validity of the results. Data were analyzed to identify common patterns across the cases.

Results suggest that farmers, food service professionals, and food distributors have complex reasons for their involvement in farm to school programs. Though their engagement could be rationalized as commercially motivated, other non-economic values, such as community, localism, and health, influenced their decisions to buy and sell locally grown food. Structural constraints that limit the integration of locally grown foods into the school food program were broadly defined as lack of material resources, oppositional school year and agriculture production cycles, and procurement regulations.


This pretest study sought to determine the feasibility and acceptability of a garden-based obesity prevention program for preschoolers. This was a classroom-based gardening curriculum program with 16 lesson plans and coordinating activities for preschool-aged children (3-5 years old) enrolled in Head Start. The study included 103 preschoolers from two centers and nine teachers or teachers' aides. Qualitative data on feasibility and acceptability was collected from process evaluation forms of individual lesson plans and focus groups with teachers. Teacher questionnaires assessed individual teacher characteristics and provided feedback regarding the
curriculum. Quantitative measures of teachers' self-efficacy, attitudes, and knowledge pertaining to nutrition were analyzed from pre and post-test surveys.

Results revealed this preschool garden-based nutrition curriculum was both feasible and acceptable, and that the program improved teacher's self-efficacy, knowledge, and attitudes about nutrition. These results indicate implementing garden-based nutrition lessons within preschools is achievable. Employing garden-based nutrition lessons in the classroom is the first step in teaching children about nutrition and gardening concepts. The next step in the larger parent study of this program is to construct gardening beds for more hands-on learning.


This study sought to determine whether participation in the Farm to You exhibit enhanced behavior change in fourth and fifth grade students beyond change seen after these students had participated in the Healthy Oklahoma Youth (HOY) nutrition education program. Repeated measures and case-control design were used to measure changes in frequency of food and physical activity behaviors. A repeated measure t-test evaluated differences in pre and post questionnaire items among the control and intervention group. Analysis of variance (ANOVA) identified significant differences in the amount of behavior change between students who experienced the Farm to You exhibit and those who did not.

There were significant changes in behavior within the control group in four of the ten items on the questionnaire. Within the intervention group, the paired samples t-test revealed six behaviors in which means significantly raised from pre to post intervention. The frequencies analysis identified a greater percent of students in the intervention group reporting increased frequency for performing the evaluated behaviors when compared to the control group for seven of the ten questionnaire items. Farm to You in combination with HOY enhanced nutrition behavior change in fourth and fifth grade students beyond that achieved by students exposed only to HOY.


This research serves as a tool to assist food service personnel and policy makers in finding school systems likely to adopt the farm to school program, and to determine an efficient distribution method for commodities. Data from a survey sent to Oklahoma school districts were analyzed using a logistic model, predicting probability of program participation according to school district characteristics such as district size, food budgets, food distributors, campus policy, and percentage of free and reduced meals available. As district size and food budget allocated to fresh fruits and vegetables increases, so does probability of program participation. Distributors used for produce is also linked to program adoption. To determine effective distribution, a transportation cost template was created to calculate operation cost per mile, operation cost per trip, distribution cost per unit, and the farm gate margin. This template, along with the results of the logic model, provides information for food service personnel, farmers, and policy makers
interested in farm to school programs. This research can also serve as a tool to evaluate past, current, and future farm to school programs nationwide.

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**FOOD MARKETING**


This study examined the types of foods advertised on children's television programming to determine if there have been any changes in the number and/or types of commercials over the last 13 years. The food content of the advertisements was compared to the 2005 Dietary Guidelines to determine if the foods targeted were consistent with the current recommendations. This study also analyzed each television network to identify any differences between advertising on cable and advertising on regular programming. Findings discussed content of commercials in regard to percentage of food advertisements, and percentages of foods advertised that were classified in the fats, oils, and sugar group. The study concluded that, overall, food advertisements have not improved over the past 13 years, but the frequency of food advertisements has improved slightly.


This research examines if new marketing strategies adopted by some food companies, in response to heightened public concern about childhood obesity, have influenced consumers, specifically parents of children aged twelve and younger. Methods of corporate social responsibility included sponsorships, cause-related marketing campaigns, and environmental or "green" advertising. The research presented here expands on a model developed to understand consumer response to cause-brand alliances, and explores if and how marketers can enhance their reputations by changing advertising strategies. The motives consumers assign to marketers were examined in a series of studies. Involvement with nutrition, skepticism toward advertising, motive attributions, and attributions of blame were among the factors studied for their effect on perceived company credibility and parental attitudes toward the company.
FOOD POLICY


This project studies the school food environment, specifically the prohibition of unhealthy food in à la carte lines, to examine the effect on students’ weight status. Unique student-parent-and-school matched survey responses collected from a small sample of Nebraska schools were used to estimate the effect of prohibiting junk food in the à la carte lines at breakfast and lunch on the probability students are overweight or obese. Results suggest that prohibiting junk food sales in school is potentially effective in reducing overweight or obesity among students.


The purpose of this descriptive retrospective study was to display the intersection of U.S. Agricultural Policies, which created the U.S. food supply composition, and Health Policies, which focused on disease treatment, on an individual level disease, obesity. The intersection in the 20th century between U.S. agricultural and health policy has shaped the nutrient composition of the food supply and school children’s growth, but there is a disproportionate increase in obesity among children in the United States when compared to children in from 13 other developed countries. An unintended consequence of U.S. agricultural policies was a change in the food supply, creating a niche for cheaper alternative processed and refined foods. Increases in nutritional programs and exponential increases in crop subsidy programs began in the 1960s, creating a food supply that was very different in both which crops were produced and prices from the early part of the century. The U.S. diet changed over the century from one low in fat and high in unprocessed grains, fruits, and vegetables to a diet high in fat, sugar, and processed foods and low in vegetables and fruit. Consumption patterns also changed during of the century; as consumption of processed foods and protein increased, children’s BMIs rose sharply. The changes in the food supply and the increase in children’s BMI suggests that the food affected the health of the children. Policies created to combat childhood obesity need to reflect the changes in agricultural production in order to offer a food supply that provides affordable nutrition to the entire population while creating a healthy food environment to foster appropriate body weights.

This study used survey methodology to investigate food safety training offered in Texas school foodservice facilities in relation to implementation of Hazard Analysis Critical Control Point (HACCP). Online and paper surveys were administered to 525 randomly chosen foodservice directors, and 120 completed the survey. Results were summarized, and statistical analyses were conducted using Pearson's Product Moment Correlation and Analyses of Variance. Food safety training is currently being provided in school foodservice through different methods. A majority of school foodservice directors agreed with the effectiveness of food safety training, had favorable attitudes towards food safety training and faced few barriers to food safety training. Overall, this study concluded that most Texas school foodservice facilities have standard operating procedures and a HACCP plan in place.


The purpose of this study was to identify public school foodservice administrators' perceptions of required and/or desired inputs by their districts to comply with the HACCP-based food safety program mandate. An electronic survey, developed with input from a national panel of experts, was sent to a stratified, random national sample of public school foodservice administrators (N = 1,850). Respondents (n = 567) provided information regarding large and small equipment purchases, staffing, program development time, training, and assessed attitudes about HACCP/food safety training, HACCP benefits, and challenges. Further, four site observations of elementary and secondary school kitchens were conducted, including district- and site-level management interviews to provide support for national survey findings.

Study results indicated most districts did not purchase large equipment items because of insufficient funds. Large districts purchased more large equipment per site than did small- and medium-sized districts. The majority of school districts had purchased thermometers either prior to or after the 2004 mandate. Large districts purchased more small equipment per site than did small districts. Most respondents indicated district foodservices had not hired more staff as a result of the new mandate. There was an increase in food safety training reported for both site-level managers and food assistants. The most frequent provider of the food safety/HACCP training was the district's foodservice staff. The district foodservice director was primarily responsible for writing the original standard operating procedures, using a median of 40 hours for development. Most respondents replied there had not been any additional costs associated
with obtaining the required number of annual health inspections. This study also identified overall challenges to HACCP implementation as perceived by school foodservice administrators.

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**FRESH FRUITS/WHOLE GRAINS**


This study sought to determine if vegetable consumption among a group of 75 fourth-grade students could be increased through assorted school-based interventions. Interventions included fruit and vegetable "Challenges," offering a new variety of fruit, and classroom nutrition education. Photographs of students' school lunch trays were taken pre- and post-consumption and then analyzed to determine consumption. Differences in mean intake across time were examined, and paired t-test analyses were used to assess if observed differences were statistically significant. Compared to baseline intakes, the variety intervention significantly increased mean fruit and vegetable consumption (p<0.001). The "Challenges" also increased intakes, however, the increase was not consistently significant (p=0.014 to 0.824). The education intervention was not associated with significant increases (p=0.642).


This study administered a descriptive survey to grant recipients who received funds to purchase a sectionizer and slicer to prepare more attractive fruits and vegetables for school food service lines. Survey participants reported a significant reduction in workload on staff, as well as an increase in the amounts of fruits and vegetables children took from service lines. The study concludes that equipment designed to increase convenience or enhance the appearance of fruits and vegetables in school food service operations may increase the consumption of fruits and vegetables provided.


This project is comprised of three interrelated studies, which incorporated qualitative and quantitative research tools. The ultimate purpose was to identify diverse strategies for increasing whole grain consumption among elementary school children participating in school lunches.
and/or after-school snack programs. Study I, which spanned fall 2005 and spring 2006, gradually incorporated white whole wheat flour into bread products served in elementary lunches. This study showed consumption of whole grain increased as the level of white whole wheat flour gradually increased in modified bread products. Study II, which took place in spring 2007, introduced whole grain snacks into an elementary after-school snack program. Data from Study II suggested that children were more sensitive to the taste and texture of the 100% whole grain product as compared to snacks with less whole grain. Snack products with considerable whole grain content require additional research in order to increase their appeal to children. Study III, which took place in fall 2007, compared intake for a Graham snack with varying whole grain levels in an elementary after-school snack program. Over eight weeks, children were offered graham snacks in a random order containing five, eight, 12, and 16g of whole wheat flour per 30g serving. Consumption for the five, eight, 12, and 16g graham snacks was 80%, 76%, 79%, and 80%, respectively. This suggests that these snacks can contribute a significant dietary source of whole grain.


This study determined outcomes and implementation methods in six schools participating in the USDA Fresh Fruit and Vegetable Program (FFVP), and also identified eight perceived barriers to advancing program goals and sixteen strategies on how to overcome them. A pre-post one group design was used. At each school, students enrolled in fourth-eighth grade completed questionnaires with questions regarding dietary intake and attitudes towards fruits and vegetables before the program started that year, and then eight months after it began. At month eight, teachers completed an online survey to determine participation and perceptions. Interviews were conducted with food service directors and managers to gather implementation practices, and FFVP purchase records were examined. Quantitative data were analyzed using t-test, Mann-Whitney, Kruskal-Wallis, and Chi-square tests. Interviews were analyzed using thematic content analysis. Purchases varied among schools, averaging 84% fruits and 16% vegetables. Students improved whole fruit intake (1.7±1.1 vs. 1.2±1.1; mean portions ±SD; p<.001); those at schools with purchases >20% vegetables increased intake of certain vegetables (p=.004). Teacher modeling (p=.032) and fruit and vegetable quality (p=.006, .014 respectively) varied by school, and lower levels of teacher modeling and food quality were found in schools that had no change in students' fruit or vegetable intake. Student intake of fruits and vegetables increased from beginning to end of the year. Increasing vegetable purchases, and improving food quality and teacher modeling may improve outcomes. Policy and implementation modifications should be considered to reduce barriers to serving equitable amounts of vegetables and to encourage teacher involvement through modeling and incorporation of nutrition education in their curricula.

The purpose of this study was to evaluate the associations of diet quality, food insecurity and dental caries prevalence and severity in children ages 2-11, and to examine associations between diet quality and dental caries in young children in the National Health and Nutrition Examination Survey (NHANES). Study subjects were children ages 2-5 (n=801) and 6-11 years (n=1097) from the 2001-2002 who had dental exam, food security, and diet data. Logistic and linear regression was used to explore relationships between caries status and diet exposures and food security status, controlling for age, race, poverty, household smoking, dental visits and health insurance coverage. Diet quality indicators and dental caries status were compared between NHANES 2001-2002 and NHANES III [1988-1994] (n=4119). Children ages 2-5 in the upper quartile of diet quality were 69% less likely to have early childhood caries (ECC) (OR 0.31, 95% CI 0.18, 0.56) compared with those in the lowest quartile. Young children living in food insecure households had higher caries prevalence than food secure children (38.2% vs. 23.0%, p =0.004) and a 1.8 greater odds of caries (95% CI 1.09, 2.97). In children ages 6-11, multiple linear regression models identified specific eating behaviors (total number of meals and snacks, soda consumption and number of days/week school lunch eaten) as being significantly associated with the number of decayed and filled primary teeth (p <0.05). In children 2-5 years, there were consistent relationships in both NHANES 2001-2002 and III between ECC and the following dietary characteristics: total HEI score and its fruit, grain and cholesterol components; daily servings of vegetables, fruit, milk, yogurt and total dairy; and number of daily meals and soda consumption (p <0.05). The association between diet quality, food insecurity and caries in children ages 2-5 and between dietary behavior and caries severity in older children have implications for public health policy and health promotion initiatives.


Minority and disadvantaged populations experience higher morbidity and mortality from diseases associated with poor nutrition and obesity. The most significant predictor of childhood obesity is parental obesity, but heredity is not the sole cause of this connection. This project used a biocultural political economic perspective to identify aspects of the household and family that are strongly correlated with the presence of obese individuals in the household. A second aim was to identify barriers and facilitators to healthy behaviors that can be addressed in community intervention programs. The researcher conducted structured and semi-structured in-depth interviews and quantitative anthropometric measurements of families with children aged 6-12. The interviews and measurements occurred in participants' homes, and recruitment was
purposefully conducted in a primary low-income, urban, African-American area, as well as through an inner-city school. Fifty-four home visits were conducted between December 2006 and July 2007. Child weight status was significantly related to parent weight status. Additionally, higher weight status among children and their parent/guardians is significantly related to the presence of neighborhood cohesiveness and to the perception that the neighborhood is not dangerous. Children whose parents were employed and had higher incomes and more household possessions were less lean than those whose parents were unemployed, had lower incomes and fewer household possessions. Higher weight status of children also showed a relationship with frequent church attendance, watching more television, and getting less sleep. The influences on obesity in a low-income urban U.S. sample are intimately and intricately intertwined, and further research is needed.


This study incorporated new methodologies in order to explain the effects of the National School Lunch Program on childhood nutrition. This research further established consumer profiles and the effects of transactional variables, previous away from home behavior, and decision structure on food away from home expenditures. In regards to the National School Lunch Program, it was found that meal nutritional quality is not higher for program participants; however, overall intake for most vitamins, minerals, and other dietary components is higher compared to non-participants that attend a school which participates in the program. The reason for increased intake is due to the increased consumption of food for participants, not due to food quality. Transactional variables were evaluated to determine their effect on food away from home expenditures by facility type. A new decision structure chronology was also implemented. Results showed that both the new decision structure and transactional variables are important to the expenditure amounts and who is eating away from home at each facility type.


This study evaluated the effectiveness of a parent and child multidisciplinary program that was designed to provide nutrition education, increase activity, and modify lifestyle and behaviors, with the goal of reducing overweight in children. A survey was developed to assess dietary patterns, health beliefs, and activity level of children ages 7-12. The survey was administered to 20 parents who had participated in the weight reduction program for at least 6 months, and was also given to 31 parents whose children were eligible to participate in the program, but were not participating during data collection. The results showed that the Fit’N Fun program is effective in reducing the children's rate of change in BMI. Participants decreased their consumption of sweet drinks and fast food, and weight gain reduced over time. Additionally, parents were more willing to make lifestyle changes to improve their children's health, and also reported increased frequency of healthy behaviors, such as nutrition label reading.

This intervention study examined family involvement and healthy food behaviors prior and post to a three month nutrition education that was conducted as part of a residential summer camp for overweight adolescents in West Virginia. Twenty-one parents were included, one parent per camper. The intervention included nine hours of nutritional instructional time consisting of lectures, PowerPoint presentations, and a grocery store tour. Data were measured to determine occurrence of positive changes within the home environment of these families. Parent education sessions were evaluated. A factor analysis and independent samples t test were used respectively to assess internal consistency and pre and post-intervention changes. Significant positive improvements occurred in the following: nutritious food availability (p<0.02), meal planning (p<0.02), aspects of positive family meals (p<0.02). The study concludes that including parent education sessions in summer camp interventions has an impact on overall home environment.


This study examined the accuracy in identification of overweight and obesity within a sample of African American caregiver and child reports in an existing dataset, with regard to the role of demographic, psychological, behavioral, and attitudinal variables in predicting accuracy. The sample included 58 African-American child-caregiver dyads recruited from a University-affiliated pediatric primary care clinic. Caregivers were female and child participants consisted of boys (n = 29) and girls (n = 29) between the ages of 8 and 12 years (M = 10.17 years, SD = 1.45). The average BMI percentile-for-age among children was 72.26.

Results indicated that the children were more likely than the caregivers to accurately report their weight, with male children reporting with more accuracy than the female children. There was no significant difference by child gender in the caregivers' accuracy in reporting child body weight status. The significant predictor of caregiver accuracy within this sample was caregiver's attitude about their child's body weight status. Similarly, the single significant predictor of child accuracy was child's attitude about their body weight status. Results of the present study suggest differences in the recognition of childhood overweight and obesity in a sample of African-American children and their caregivers, which may be related to the role of ethnicity and cultural variables involved in the perception of overweight and obesity. This points to a need for pediatricians to assist caregivers in accurately identifying healthy versus unhealthy weight status in children, rather than assuming that the caregiver is aware of the child's body weight status. This research highlights the need for the development and implementation of a culturally-sensitive, values-based treatment program within the clinical pediatric setting for overweight and obese African-American children.

This study sought to define the relationship between household food insecurity (HFI) and child overweight outcomes in an inner-city preschool and school-aged population. This study used a cross-sectional study design augmented by validated Early Pregnancy Study data collected prior to this study. Thirty-six pairings of mothers aged 23-44 and their children, aged now 4-7 years, were tracked in this follow-up study. Twenty-eight percent of mothers reported HFI; 83% of mothers were classified as overweight or obese; and 58% of children were categorized as at-risk for overweight or overweight. One unexpected finding included a significant association between current maternal BMI and presence of a co-morbidity in the child (p<0.05). The study finds the influence of household food insecurity on child overweight remains unclear, however findings demonstrate maternal weight is highly predictive of child overweight as early as preschool.


The main objective of this project was to study the effects of a home-based physical activity and nutrition program for preschool children to determine if there was a significant difference in parental responses to use of a weekly kid calendar after receiving an informational health newsletter for a period of 4 weeks. Follow-up focus group discussions with the parents served several secondary purposes for this investigation: as a method for the researcher to explore parental perceptions, attitudes, and behaviors about the program; to determine the length of time feasible for continuing such a program and in order to maintain targeted health behaviors within the home setting; and to furthermore assess barriers to completing such a home-based program. Families were asked to use a weekly kid calendar to track their child's behaviors. The weekly kid calendar focused on five components which all shared the common goal of improving in one of the following areas: increase fruit and vegetable servings; increase low-fat dairy servings; reduce soda servings; decrease fast food visits; and increase minutes of PA. Parents completed baseline surveys, four weeks of kid calendars, and an end-of-study survey. After completing the program, parents were invited to participate in a focus group discussion. Study findings suggest that a targeted minimal intervention of sending home weekly health information coupled with tracking health behaviors significantly increase specific health behaviors. Findings for soda consumption, visits to fast food restaurants, and amount of time engaged in physical activity were not statistically significant, which suggests these behaviors need more emphasis.

This needs assessment used a cross-sectional design and was conducted with low-income Hispanic and African American caregivers of children between the ages of 2-5 years who regularly attended community health centers in Bronx, New York. Themes explored included adult and child diet and activity, as well as preferred learning times and formats. Results indicated that respondents have an overall interest in achieving a healthy diet and participating in physical activities for themselves and their children. Respondents were particularly interested in learning about how exercise can help them relieve stress. Some participants reported less interest in addressing chronic disease issues and less concern for preventing weight gain in their children. Respondents were interested in talking with a health educator by phone and in attending a class, with more interest in attending a cooking class than other classes.

The low response rate for the survey, mainly due to a hard to reach population, may also indicate that the field of health education may be limited in its ability to assess caregivers’ needs due to issues that are inherent to the low-income urban environment, such as poverty, lack of access to fresh fruits and vegetables, and poor housing. These are barriers that could prevent participants from fully considering their interests in nutrition and activity topics. Incorporating physical activity and cooking classes for young mothers at WIC offices, or providing healthy meals and activity classes at Head Start and preschool programs, may be better ways to improve nutrition and activity health behaviors and lead to more sustainable results.


This study developed a descriptive analysis to understand what intervention might be beneficial in combating obesity in the Mississippi Delta, while also considering the poverty issue of the population. Focus groups were conducted to determine barriers to healthy eating behaviors for children, grades K-2. Focus groups (n=6) with parents or guardians of children from six elementary schools in the Mississippi Delta were conducted in the spring of 2007. The emergent themes included perceived healthy foods, where diet information had been retrieved, and the efforts associated with meal preparation. Participants also voiced concern regarding the school policy on vending and coke machines that provide high-calorie, non-nutritious foods.


This study examined relationships among parental concern about child overweight, general parenting style, and specific feeding practices. Study participants were 129 children aged three, four, and five years of age and were enrolled in one of four Oklahoma Head Start Centers. The children’s parents completed a demographic questionnaire and other questionnaires examining
parenting practices. Anthropometric measurements, including height, weight, and triceps skin fold, were measured in fall and again in spring. A mismatch between actual child weight and parental concern existed. Although 63.6% of parents with children who are considered overweight according to CDC standards were concerned, only 34.8% of parents of children at risk for overweight were concerned. Parents who were concerned about their child's weight were significantly more likely to be active-restrictive in parenting style and were more likely to discourage their children from eating foods, provide negative consequences for eating, and plan meals and read labels. As BMI increased above the 70th percentile, increasing weight was related to increasing parental use of discouraging practices and attempts to control junk food. Study results show an increase in parental concern with increase in child weight, and show a mismatch between concern and at-risk-for-overweight status among preschool children. The study results also demonstrate that parenting style and feeding practices are related to parental concern about their children being overweight.


This study concentrated on a sample of 20 youth, aged 7-17, of low income families of diverse ethnicity in an urban center, as they went through the Taking Steps Together (TST) program. TST is a family centered intervention developed at the Hennepin County Medical Center Pediatric Clinic that uses behavioral modification and lifestyle education in a format meant to complement primary care in the treatment of pediatric overweight and obesity. After a 12-week TST program, analysis of BMI percentage yielded that at least half of the participants maintained their BMI over the course of the study. Health related behavior changes were demonstrated in all domains, although only three domains were statistically significant, including type of milk consumed, physical activity level, and quantity of sugared drinks consumed. Lastly, analysis of biomarkers revealed that the majority of participants showed some form of metabolic derangement. The TST program was effective over a 12-week period of time in maintaining BMI and improving health related behaviors. Health care providers need to be aware that obese children may have a high likelihood of metabolic derangement and should take that into consideration in their medical management.


As states mandate that schools employ child BMI screening and referral programs, parental insight is essential to determine the efficiency and effectiveness of BMI notification. Therefore, the purpose of this multiple case study was to explore the perceptions of 21 parents whose school-age children received a BMI referral letter stating their child is overweight. Detailed descriptions of each case and themes were developed, followed by cross-case thematic analysis. Eight themes and corresponding sub-themes emerged. Themes regarding parental perceptions were: feelings about receiving the letter, causes of obesity, capabilities, barriers, role modeling,
primary care provider response, school's role and health screening process. Parents' feelings were categorized into sub-themes of positive/neutral, negative, disbelief, or more than one emotion. Capabilities included changes in diet and activity and support/communication. Barriers encountered were financial, lack of time, lack of control, lack of knowledge, and other children and age. Provider responses were categorized into supportive/neutral or negative. Role modeling of their own behaviors and the behaviors of others was identified as significant. Regarding the school's role, topics included education, increasing activity, responsible snacking and parties, and school lunches. Finally, the process before, during and after the health screenings was discussed.


Increased labor force participation rates have reduced the amount of time mothers, who are still considered the primary caregivers, have to spend in traditional child-rearing activities. This may cause overweight and obesity rates to increase due to mothers being unavailable to monitor the food and exercise choices their children make. This study used the Early Childhood Longitudinal Study (ECLS-K) dataset to examine the possible impact of maternal employment on the overweight and obesity rates of children. The data contain information for the same children during their kindergarten, third grade, and fifth grade school years. Examination of the headcount ratios, a weight gap index, and a squared weight gap index indicate significant obesity rates for each of the years, as well as significant increases across years. Results indicate that maternal employment increases child obesity rates for males and the middle income quartile if the mothers work part-time. Overall, results indicate maternal employment does not have a significant impact on the probability that a child is overweight or obese.


The purpose of this study was to discover ways in which child, family, and community characteristics might influence children's BMI, and this study specifically investigated how children's participation in community-based physical activity mediates the influences of child, family, and community characteristics on change in BMI. Data from kindergarten through the fifth-grade from a national longitudinal dataset, the Early Childhood Longitudinal Study - Kindergarten Class of 1998 -1999 (ECLS-K), were used to address the research questions. Results revealed that higher community disorder was associated with lower levels of physical activity participation and also with greater parental restriction about the time children spent watching TV. Higher parental education was associated directly and indirectly through feeding practices, with lower levels of BMI at kindergarten and with a subsequent decline in BMI. Higher parental education was also associated with greater parental restriction about the time children spent watching TV and higher levels of physical activity participation. The observed association between trajectories of community-based physical activity participation and trajectories of BMI diminished after controlling for family socioeconomic status. Different
familial experiences in relation to factors that predict the risk for developing obesity were also
found among different race/ethnic groups. Study findings demonstrated family mechanisms
through which community disorder influence risk for developing child obesity.

**LEADERSHIP**

nutrition and physical activity curriculum and training for after school program
leaders: Comparing the effects of dissemination method on leader program
implementation, perceived success, nutrition and physical activity knowledge
April 6, 2010, from ProQuest Digital Dissertations database (Publication No. AAT
3384723).

This study examined whether Web-based delivery, as opposed to a face-to-face (FTF) training
model, is a viable and cost-saving mechanism for training after school program leaders (ASPL)
to implement a nutrition and physical activity curriculum. This study also assessed the effects of
peer interaction on study outcomes. Eighty-nine ASPLs from 12 states were included in the main
study, which took place over 16 weeks. Two groups were randomized to either standard or
enhanced interaction online trainings delivered via a commercial learning management system
(LMS). A concurrent FTF group served as comparison. Secondarily, a long-distance-delivered
FTF model and an open source LMS-delivered Web-based model were assessed. This study
found that online dissemination of programs and trainings for ASPL's is a viable and cost-saving
alternative when compared to FTF dissemination.

Lewis, R. S. (2008). Interorganizational networks, childhood health policy and the
expanded role of the public school district food service director. *Dissertation
Dissertations database (Publication No. AAT 3301953).

This study examined the expanding roles of public school district food service directors (FSDs)
as they work outside of their traditional public management roles to implement new state and
federal student wellness mandates. This study also examined FSDs' use of formal and informal
inter-organizational networks to install new public health policies. A set of pre-interviews served
as the thematic basis for a questionnaire, which served as the primary research instrument. A
secondary analysis of a previously published national study is included as a triangulated
approach in presenting the findings. This study found that, whether designing new menus or
working on campus health policies, many FSDs seek input from a variety of stakeholder groups
including students, parents, and teachers. The study finds FSDs acting as enforcers of campus
wellness policies, and that FSDs turn to professional networks for educational purposes,
management skills training, and political advocacy. FSDs seek input from regional, state, and
national formal networks. At the community level, FSDs seek workgroup participation from
student councils and parent-teacher organizations. Study results indicate that campus wellness policies experience greater acceptance when students, parents, and local community groups are treated as co-creators. FSDs would be well served in seeking managerial training in authoring, implementing, and enforcing new district board policy. Team-building skills that include outside community stakeholders are necessary competencies for 21st century public school district FSDs.


This study examined the practices and attitudes of foodservice directors in regard to the school nutrition environment and foods/beverages sold to Texas middle school students. Researchers developed a questionnaire; six school foodservice directors validated the questionnaire; and then the instrument was pilot tested at 10 school districts. A revised questionnaire was mailed to a random sample of 391 Texas school foodservice directors, and then statistical analyses were conducted using Pearson Product Moment Correlation, Analysis of Variance, and Chi-square. One hundred twenty-one respondents returned completed surveys (31%). The majority of foodservice directors (93%) felt that their middle schools provided a healthy school nutrition environment. Most schools limited students to one 3 oz. serving of French fried potatoes and did not sell carbonated beverages or cookies. Data analyses showed no significant differences in attitudes or food sale policies related to director education level or work experience.


This study examined school nutrition services supervisors’ (SNSS) knowledge and confidence about the Dietary Guidelines for Americans (DGAs). This is a quasi-experimental study with a pre- and post-test design. The sample included 15 SNSSs from the Nutrition Services Branch of the Long Beach Unified School District. The nutrition education workshop used resources and material provided by the Bell Institute titled, "Cruise the Sea of Healthy Living." The participants' post-test knowledge scores increased significantly after the educational workshop. Confidence scores showed an increase in six out of the seven research questions for confidence, demonstrating that SNSS can improve their knowledge and confidence about the DGAs.


This study examined customer-focused continuous improvement efforts in five Minnesota public school districts. One hundred ninety-six front-line workers were surveyed, and workers came
from the following work groups: food service, operations and maintenance, human resources and business services, transportation, and administrative/other support. Survey items reflected the components of quality management as found in the Malcolm Baldrige National Quality Award's *Criteria for Performance Excellence*. Data were used to examine participants' perceptions of quality management on the job in terms of leadership, data, planning, the workforce, work processes, stakeholders, and results. Structural equation modeling (SEM) was used to examine the relationship of these constructs in the support functions of elementary and secondary education as well as the applicability of the Baldrige model to this setting. Though key differences were noted, overall the study findings were consistent with previous research that used the Baldrige model in manufacturing, health care, and higher education settings.


This study investigated the affect of the personal health practices of secondary principals on their self-efficacy in leading school improvement. A two-phase sequential transformative mixed-methods correlational research design was used to survey all Rhode Island secondary school principals on self-efficacy to lead school improvement and health behavior practices, and interviews with volunteer respondents provided depth of understanding. Study results showed a significant negative relationship between principals' reports of ease of sticking to plans and their ability to maintain a healthy weight. A significant positive relationship was found between principals' report of ability to remain calm and their belief in the importance of practicing healthful behaviors. Principals' health practices enhanced their efficacy to lead school improvement, specifically in the areas of maintenance of healthy weight, belief in practicing health behaviors, and stress management. Recommendations from this study include strategies to legitimize the role of principals' health practices as it relates to self-efficacy to lead school improvement through policies and standards that define the role of educational leaders, educational leadership development and support programs, and public health organizations. The role of communities, families, and the individual principal are also discussed.


This study focused on the changes in the food and beverages as a result of the wellness policy and on the differences in beliefs between school district superintendents and food service managers regarding their level of responsibility in fighting childhood obesity. This study also examined the relationship between the superintendent's self-reported knowledge of childhood obesity and the changes made to the food and beverages, and the relationship between the food service manager's self-reported knowledge of childhood obesity and the changes made to the food and beverages. The data for this non-experimental study were collected using quantitative methods. Statistical testing revealed a change in the food and beverages served as a result of the wellness policy. The study uncovered no significant difference in beliefs between superintendents and food service managers regarding their level of responsibility in fighting
childhood obesity. Additionally, there was no significant relationship found between the level of knowledge of superintendents about childhood obesity and the changes that were made to the food and beverages served at school from the 2005-2006 school year to the 2006-2007 school year. A significant relationship was found between the level of knowledge of food service managers about childhood obesity and the changes that were made to the food and beverages served at school from the 2005-2006 school year to the 2006-2007 school year. This study concludes that superintendents and food service managers both feel a responsibility in fighting childhood obesity and are working together to fight this national epidemic.

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**MULTICULTURAL FOOD & NUTRITION ISSUES**


The primary focus of this study was to assess the availability of fruits and vegetables (FV) in low-income Hispanic families with preschool-aged children; the secondary focus was to determine the parental level of stage of change (SOC) for serving more FV to their children and to explore factors that influence FV availability. This two-phase study used a convenience sample from two Head Start sites in Tulsa, OK. The first phase used a previously validated Fruit and Vegetable Survey (FVS), and the second phase used focus groups. Descriptive statistics, Analysis of Variance, and content analysis of focus groups were used to summarize the findings.

Study results reveal that more than 60% of the subjects were in the pre-action stages for serving more FV to their preschool-aged children; and that only 39% of the participants were in the action and maintenance stages. The total amount of FV served by the participants was 4.5±2.3 servings per day (vegetable servings=2.16±2.3; fruit servings=2.85±2.36 w/FJ). Subjects in lower SOC served significantly smaller amount of FV compared to subjects in higher SOC (p<0.001). Nearly 50% of the fruit servings were served in the form of fruit juice. The intentions to serve more FV in lower SOC were significantly hindered by the cost of FV, as well as the time required to purchase and prepare FV. The results of the focus groups revealed that subjects had relatively low self-efficacy for preparing FV to their preschool-aged children. The study concludes that effective nutrition education programs should be developed to decrease barriers to FV availability and to increase parental self-efficacy for serving FV.


This study explored the following risk factors for non-insulin dependent diabetes mellitus in youth (NIDDMY): obesity, onset of puberty, family history, self-identified nationality, food choices, physical activity, and menarche from a modified ecological model of human
development. This was a cross-sectional study of Hispanic girls between nine and 18 years of age who self identified as Latina, Mexican-American, Cuban, Puerto Rican, Cuban, and South American. This study had four hypotheses. The first hypothesis identifies a stronger association between food choices and the school's food availability, but that portioning is strongly affected by home environment. The second hypothesis identifies a direct correlation between the attitude toward physical activity held in the home and the girls' activity level, regardless of physical activity programs in the school and community. The third hypothesis identifies a direct correlation between onset of pre-diabetes and menarche in the Hispanic female pediatric population. The fourth hypothesis identifies a direct association between family history of the disease and pre-diabetes in the study population. Significant findings include: mothers of the group of girls with pre-diabetes were less likely to have completed High School than the mothers of girls without pre-diabetes. Consumption of fries was associated with pre-diabetes, but the relationship was weak, while the percent of body fat and lean body weight was significant.


This study investigated the correlation between blood pressure (BP) and metabolic syndrome (MS)-related traits by examining 604 non-diabetic Mexican American children and adolescents, aged 6-17. The major goals of this dissertation were to examine various MS-related traits in Mexican Americans; to determine the genetic influences on measures of systolic blood pressure (SBP), diastolic blood pressure (DBP) and other variables by estimating heritabilities; to examine common genetic influences (i.e., pleiotropy) on BP and its related MS-related traits (e.g., obesity) by using bivariate analyses; and, to investigate potential genetic-by-environment interaction influences on BP. Variance component analysis was used for both univariate and multivariate models to partition the total phenotypic variation of a given trait(s) into genetic and environmental components.

Study results indicated a high to moderate occurrence of various MS risk factors in these children: overweight = 52%, obesity = 33%, low HDL = 24%, pre-diabetes = 15%, increased abdominal obesity = 14%, and high blood pressure = 13%. These findings signify the increasing burden of disease risk in these children due to elevated BP, higher prevalence of obesity, and lower insulin sensitivity. The heritabilities of SBP, DBP, and elevated BP are high in this population, suggesting that additive genetic factors strongly influence BP. The relative contributions of both genetic and environmental influence were quantified, genes accounted for 25-85% of the phenotypic variation in measures of blood pressure, adiposity, lipids, microalbuminuria, insulin and glucose, whereas age, gender, puberty and physical fitness and other environmental covariates accounted for <45% of the total phenotypic variance.

The purpose of this study was to explore the attitudes and beliefs of parents, teachers and principals of a population of elementary school students in Tulsa, Oklahoma who are at increased risk of overweight and related conditions. Thirty-six elementary school principals participated in a survey that provided quantitative data for this study, and six parents and six teachers of fourth or fifth grade African American students participated in one-hour interviews, which provided qualitative data for the study. The constant comparison method was used to triangulate sources and to compare and contrast responses from each stakeholder group. SPSS was used to analyze the survey data and NVIVO was used to analyze the interview transcripts. This research adds key stakeholder perspectives to the body of knowledge, and these data are needed to ensure that implemented programs are supported by the key stakeholders and are sustainable over time.


This qualitative study used a phenomenological approach to explore the experiences and perceptions of weight-related health in six African American families (a total of 18 participants) with a child who was diagnosed as overweight or obese. The purpose of this study was to provide a forum for African American families to voice their experiences in order to highlight areas of influence on their weight-related health as well as their preferences for weight-related programs. All families completed a demographic questionnaire and used cameras to photograph factors relevant to their weight-related health using the Photovoice methodology. Families believed health professionals, such as physicians, helped them understand weight-related health. Family was viewed as a strong source of support for living a healthy lifestyle, and weight-related health programs were seen as valuable. Challenges to following weight-related health recommendations were perceived as being due to limited income. Study findings suggest that it is vital for family therapists to have training in cultural competence to gain knowledge and skills to effectively work with African American families. In addition, health care providers are encouraged to collaborate with African American families to develop effective interventions.


This study examined the effects of a parent-focused, low-literacy, media-based intervention followed by motivational interviewing in a primary care setting on BMI, waist circumference, self-perception, family eating habits, and family activity habits in obese, Hispanic, school-aged children. Thirty-one obese, Hispanic, school-aged children between 6-11 years of age participated in the study. There were 15 parent-child dyads in the experimental group and 16
parent-child dyads in the control group. The study implemented quantitative and qualitative designs in two phases. The first phase of the study was quantitative, where parent-child dyads were randomly assigned into two groups. Pretest and post-tests measures of BMI-z scores, waist circumference, self-perception, and family eating and activity were obtained initially and two months later. Focus groups were conducted with parents to understand attitudes and feelings about the Internet and Internet support groups for helping with medical problems. Data revealed changes in the experimental group in terms of BMI-z scores, waist circumference, and family eating habits. Decreases in BMI-z score was significant for the experimental group, \( p = .009 \) and changes in waist circumference was significant, \( p = .004 \). There was no significant change in the total child self-perception score, \( p = .10 \). There was a statistically significant t-test on physical appearance in the experimental group, \( p = .005 \). Regression analysis showed no relationship between BMI-z, waist circumference, family eating and activity with age, gender, or income. The qualitative component suggested that technological knowledge and lifestyle may play a role in the use of technology in healthcare. Cultural factors need to be considered in designing educational programs. The major barrier to Internet support groups was lack of time and knowledge.


The purpose of this study was to determine the effectiveness of the Food Center delivered the Sprouting Healthy Kids (SHK) program, a program in Austin, TX that targeted low socio-economic status children in four intervention middle schools. The study explored the effects of the SHK intervention in middle school students' preferences, motivation, knowledge, and self-efficacy towards fruits and vegetables intake, as well as the actual fruits and vegetables intake. The study also aimed to determine the effects of exposure to different doses of the SHK intervention on participants' fruits and vegetable intake. The school-based SHK program delivered six intervention components: a cafeteria component, in-class lessons, an after-school garden program, a field trip to a local farm, food tasting, and farmers' visits to schools. The SHK was delivered during spring 2009 to 214 students. Students completed the pre-and-posttest surveys measuring self-report fruits and vegetables intake as well as intrapersonal factors. Results showed that the school cafeteria, the food tasting, the after school program, and the farmers' visits had a positive effect on the participants' motivation, knowledge, and self-efficacy towards fruits and vegetables intake. The farmers' visits and the food tasting components increased participants' fruits and vegetables intake. This study suggests that exposure to multiple intervention components increased behaviors and attitudes towards fruits and vegetables consumption, and these findings are consistent that SHK can positively influence behaviors of middle school students.

This study used the Viva La Familia Study to examine potential relationships between daily proportions of energy consumed and energy derived from fat across breakfast, lunch, dinner, and snack, and obesity among Hispanic children and adolescents 4-19 years old. The study enrolled 1,030 Hispanic children and adolescents from 319 families. Factors examined were related to increased body weight by focusing on a multilevel analysis of extensive sociodemographic, genetic, metabolic, and behavioral data. Baseline dietary intakes of the children were collected using 24-hour recalls, and body mass index was calculated from measured height and weight, and classified using the CDC standards. Dietary data were analyzed using a GEE population-averaged panel-data model with a cluster variable family identifier to include possible correlations within related data sets. A linear regression model analyzed associations of dietary patterns using possible covariates, and examined the percentage of daily energy coming from breakfast, lunch, dinner, and snack while adjusting for age, sex, and BMI z-score. Random-effects logistic regression models were used to determine the relationship of the dietary variables with obesity status and to understand if the percent energy intake derived from fat from all meals affected obesity. Children of ages 4-19 years consumed a higher percent of energy at lunch and dinner and less percent energy from snacks compared to younger children. Age was significantly associated with percentage of total energy intake for lunch, as well as dinner, while no association was found by gender. Obese children consuming more energy at dinner, but no associations were found between percent energy from fat and obesity across all meals. Results from this study can be used for developing obesity prevention programs that target dietary intake patterns. The study recommends a longitudinal study to further explore the relationship of dietary patterns and BMI for this and other populations.


This qualitative case study sought to describe the symbiotic caregiving of African American custodial grandmothers and their grandchildren. For this study, symbiotic caregiving is defined as two-way caregiving activities and experiences that exist between both grandparents and grandchildren. It is a reverse and reciprocal relationship where grandparents, especially custodial grandparents, feel a sense of responsibility and attachment to their grandchildren and vice versa. The sample consisted of 18 African American grandmothers ages 65-85 years and 18 grandchildren ages 8-17 years, and these participants were recruited through the Shelby County Relative Caregiver Program in Memphis, TN. Study findings show different circumstances led to grandparents assuming caregiving for their custodial grandchildren, and some of these circumstances are related to the instability of the grandparents' biological children. In most cases, the biological parents were not involved in their children's lives. Caregiving activities performed by grandchildren include both instrumental and emotional tasks. Grandmothers saw the activities of their grandchild as a way to prepare the grandchildren for adult roles, while the grandchildren
assumed their roles in order to help with their grandmothers' physical inability. Grandmothers’ caregiving activities included daily rearing of their grandchildren, ensuring that their grandchildren have adequate nutrition, education, health care and moral support. The grandmothers envisioned themselves as parents helping to mold their grandchildren as they would with their own children, and the grandchildren saw their own roles as helping their grandmother, who was the only person who cared about them when other people around them did not. Financial stress was one of the major concerns of the grandmothers, as they needed sufficient funds to raise their grandchildren effectively. Study results indicated the grandmothers and their grandchildren form a close and reciprocal relationship, much as a filial relationship that exists between parents and their children. Study results indicate a need for the fields of nursing and research to recognize the role of the custodial grandchild. Once researchers acknowledge the existence and importance of grandchildren as caregivers, more studies should then focus on understanding the grandparent-grandchild dyad.


This study used quantitative survey research methodology to examine the knowledge, attitudes, and parenting styles of 55 Latina mothers from a Latina socialization group in Southern California. The study found the Latinas tended to be more authoritative in their parenting style, and also found that mothers with higher levels of education showed significantly more knowledge about childhood obesity. These mothers indicated that they did not have enough culturally-specific information about the obesity problem, and that they desired more information. Study findings point to a need for more culturally targeted programs to prevent childhood obesity within the Latino community.


This study examined the effectiveness of a nutrition and physical activity program, "Jump into Food and Fitness" with the Hispanic population to determine the effectiveness of the program on knowledge, attitudes and self-reported behaviors among Hispanic youth ages 8 to 11, and their parents; and to describe all the key strategies used in the development and implementation of a nutrition and physical activity program with Hispanic adults. This study used quantitative and qualitative methods. The children's knowledge scores were compared before and after the intervention, and the only statistically significant difference found was between pre-test and post-test, post-test and post-delayed test in the comparison group; and between pre-test and post-test in the treatment group. The data from the focus group interviews conducted with the parents provided evidence of the importance of receiving a skill-based program that is based on the traditional foods that they consume daily; emphasizing the importance of learning about how to combine foods and the importance of having the family involved in the program. Qualitative data from children surveys revealed what children enjoyed the most was learning about MyPyramid and the Kid's Activity Pyramid, being active is something fun, and the snacks at the end of each day. The study results indicate some of the best strategies for developing programming for
Hispanics is to make it culturally-compatible and in Spanish. It is vital to contact key, trusted people in the community who can establish relationships with the participants.


The purpose of this study was to explore the issue of white dominance in the field of dietetics. Nineteen African American women who practice nutrition education in the African American community were interviewed, and asked questions regarding their educational experiences, their practice, their perception of the profession of dietetics, and they were asked to give their opinions regarding changes that need to take place. Critical race theory (CRT), which identifies the permanence of institutionalized racism in the U.S. intersected with gender and class oppression, was utilized as a lens to analyze the findings. Even though the American Dietetic Association (ADA) called for an increase in diversity in 1984, the percent of African American dietitians remains unchanged. The women reported racism in their educational histories including exclusion, isolation and marginalization. As nutrition educators, they identified the necessity for culturally sensitive communication with clients regarding food practices and learning styles. The women described a marginal relationship with ADA, whom they characterized as gatekeepers of the credentials. Obstacles reported to becoming Registered Dietitians centered on difficulties accessing the internship process and the lack of perceived cost/benefit given low salaries. This study provides insight on how the field might become more inclusive and effective by providing a voice for those who have been marginalized in dietetics.


Three hundred and thirty-eight Hispanic low-income youth enrolled in a local San Antonio Youth Center program participated in the study. First, the association between youth's household income, and the availability and accessibility of recreational and utilitarian facilities was examined. Results indicated that youth from low-income families had longer distances to and less available number of recreational and utilitarian facilities within their neighborhoods. Second, nutrition environmental features were explored, such as availability and accessibility of fast food outlets and supermarkets. Findings suggested that the average distance to supermarkets was almost two times that of fast food restaurants. These results indicated that participants need to walk more to access a supermarket compared to the closest fast food restaurant. The available number (availability) of physical activity- and food-related facilities contributed significantly to youth BMI. Lower BMI was related to more available utilitarian (shopping malls), recreational facilities (parks) and some food stores (supermarkets). This study indicated that youth's individual features, such as age and SES, had some associations with their health conditions and built environments. Study results may provide some evidence to improve the understanding of the relationship between individual, environmental, and social characteristics, which may be useful to promote positive children and adolescent health behaviors.

This study used data from the 2004-2005 School Physical Activity and Nutrition project (SPAN) to conduct a secondary analysis of 7,907 4th-grade children (mean age 9.74 years) to investigate prevalence rates of the following possible causative factors for childhood obesity: the advertising of foods of minimal nutritional value, a decrease in physical activity, and increased media use. This study also incorporated a comic-book-based intervention that addressed advertised food consumption, physical activity, and media use. Children who had more than 2 hours of video game or computer time the previous day were more than twice as likely to drink soda and eat candy or pastries, and children who watched more than 2 hours of TV the previous day were more than three times as likely to consume chips, punch, soda, candy, frozen desserts, or pastries. Statistically significant associations were found between screen time and eating various types of advertised food. The comic book intervention was widely accepted by the children exposed to it, and pre-post surveys indicated they moved constructs in a positive direction.


The purpose of this dissertation, which spans three studies, was to describe dietary practices and to examine how they associate with demographic and school food environmental factors and substance use among a sample of alternative high school students. The dietary practices examined in this research were consumption of regular soda, sports drinks, other sugar-sweetened beverages, fruits and vegetables, and frequency of fast food restaurant use. Bronfenbrenner's ecological model guided the development of this research. Data were drawn from the Team COOL (Controlling Overweight and Obesity for Life) pilot study, a multi-component diet and physical activity intervention trial to promote healthy weight loss or prevent excess weight gain in six alternative public high schools in the St. Paul-Minneapolis metropolitan area. A convenience sample of 145 students completed baseline surveys in the fall of 2006. The current study used a cross-sectional design, and mixed model analysis of variance was utilized to examine associations between students' selected dietary practices and the explanatory variables in separate analyses for each outcome variable.

The first study examined prevalence of selected dietary practices and their associations with gender, race/ethnicity and socioeconomic status among alternative high school students. The second study examined dietary practices and factors regarding students' perceptions of the school
food environment. The third study described associations between dietary practices and the prevalence of cigarette, alcohol, and marijuana use individually, as well as with multi-substance use among alternative high schools students. The data showed overall that this sample of students reported many unhealthful dietary practices and frequently used cigarettes, alcohol and marijuana. The correlations between substance use and unhealthful dietary practices found in this study confirm previous research findings.


The purpose of this study was to determine if an after-school, all-girl nutrition and exercise program would be effective in improving nutrition knowledge, instill healthier eating habits, and increase physical fitness. Twenty-seven fourth and fifth grade girls participated in this 12-week intervention. Intervention sessions lasted one-and-a-half hours and were held twice a week, and were comprised of nutrition education and moderate to vigorous exercise. Nutrition/health questionnaire were completed pre and post intervention, and fitness measured with President's Challenge Physical Fitness Test, BMI and waist circumference were also completed pre and post intervention. The intervention group improved in four variables tested including nutrition knowledge, waist circumference, shuttle run and curl-ups. This study concludes that a 12-week duration was sufficient to improve body composition and nutrition knowledge for fourth and fifth grade girls.


This study used survey methodology to compare Texas not-for-profit private and public middle schools’ efforts to promote healthy eating behaviors. Mail and web surveys obtained data from public school directors of child nutrition and private school principals. Of the 208 surveys that were returned, 198 were summarized and analyzed. Schools were divided into three groups: public schools that participate in the National School Lunch Program (NSLP), not-for-profit private schools that participate in the NSLP, and not-for-profit private schools that do not participate in the NSLP. Significant associations were found between school types and the following: presence of a Local School Wellness Policy, vending machine access policies, foods offered in vending machines, foods offered in the lunch line, frequency of offering nutrition education, and marketing communication materials used. This study found that, overall, public schools promoted healthy eating behaviors more often than private schools.

Current studies suggest that overweight youth are at an increased risk for psychosocial difficulties, including eating disorder (ED) pathology. This three part study was designed to comprehensively describe ED pathology and its correlates in a diverse sample of 122 treatment-seeking overweight youth (11.5±2.3y). The first part of this study utilized the child version of the Eating Disorder Examination interview. Out of the 122 sample, 8.2% (n=10) of children met criteria for a DSM-IV ED, and binge eating was the most common diagnosis. Sub-syndromal ED pathology including binge eating and severe shape and weight concerns was more common, present in a significant minority of youth, and associated with increased depressive and anxious symptoms. In the second part of the study, structural equation models were used to test cross-sectional "risk" models of ED pathology to determine how known "risk" factors for EDs are related to ED pathology in overweight youth. In these youth, increased negative affect, thin-internalization, experience of teasing, and exposure to models of ED pathology were significant predictors of ED pathology, while perfectionism had an indirect protective effect via its negative relationship with thin-internalization. In the third part of this study, maternal ED pathology, general psychopathology, and family functioning were assessed. The majority of mothers were overweight or obese, and their weight was associated with increased ED pathology and general psychopathology. Maternal overweight was positively associated with child overweight, and ED and general psychopathology in mothers were associated with increased family strain and general psychopathology in children.


The purpose of this study was to examine the relationship between nutrition media literacy and soft drink consumption among adolescents. This study also sought to determine the reliability and validity of a newly-developed nutrition media literacy scale. A questionnaire was administered to 244 middle school students. The sample included seventh (n=179) and eighth (n=65) grade students (50% female; 42% Caucasian). The questionnaire administered assessed demographic information, soft drink consumption, and nutrition media literacy. The mean nutrition media literacy scale score was 35.63 ±5.33 with a range 14-45. The number of participants who consumed at least one can of soda in the previous 7 days was 51.2%. Significant correlations were found between soda consumption and the total nutrition media literacy scale (r=-1.133, p≤.05) and one subscale, Message Interpretation (r=-1.177, p≤.01). Study results demonstrated that home environmental factors, such as availability of soft drinks and parental consent to drink them, had a stronger impact on regular soft drink consumption than nutrition media literacy.

This study is comprised of several experiments which highlight the potential for unhealthy food advertising to contribute to the obesity epidemic through increased snack food consumption and preferences for categories of foods, and that advertisements influence more than brand preference. The findings of these studies demonstrate the power of food advertising to trigger impulsive eating behaviors in both children and adults while viewing television shows that include advertisements for food. It is suggested that food advertising with a snacking or enjoyment message activates the motivation to consume. The experiments suggest the potentially longer-lasting effect of food advertising is the affect advertising has on adults' and children's taste ratings for some of the foods sampled. The study concludes that repeated exposure to food advertising may contribute to overall unhealthy diets by increasing taste preferences for the unhealthy categories of foods.


This study evaluated the effect that *Fun with Food*, a week-long camp, had on children's eating behaviors. A survey was administered on the first day of camp and a post-survey was mailed to participants. Thirty-three participants (56%) returned a completed survey. Significant (p ≤ .05) change was observed for seven questions which related to consumption of whole grains and vegetable and increased self-efficacy. It appears that participation was effective in changing behaviors and increasing confidence of the participants. Study findings support a hands-on teaching approach to educate children about food from the farm to the table.


This study built on prior research examining the impact that popular, known and original, unknown trade characters had upon children's healthy and unhealthy food choices when the characters appeared on food packaging. This study tested 6-7 year olds who chose their own cafeteria lunch foods. Results of this study support that popular, known trade characters can increase the number of times children select a healthy food over an unhealthy food, while unknown trade characters can decrease the number of times children select healthy foods.

This study examined school nutrition policy and environment, foodservice, and nutrition education in Erie County, New York, to determine how students’ healthy eating habits were supported and promoted. A questionnaire was mailed to principals, foodservice managers, and health education teachers in 43 public high schools. Descriptive statistics were used. Eleven schools responded. Eight schools completed all three sections of the questionnaire. In the school policy and environment section no schools received >75%. For the foodservice section six schools received >75%. For the health education section five schools received >75%. The study concludes that these school health programs need improvement in supporting and promoting student healthy eating habits, with special attention to policies regarding foods sold outside of school meals.


This study evaluated the weekday and weekend eating patterns of children of limited resources who attended fifth through eighth grades in a rural school. The study evaluated what they ate, who prepared the food they ate, where children ate, who was with children when they ate and if there are differences in eating patterns between weekdays and the weekend. For four days, two week days and two weekend days, students kept a dietary journal four times a day. One-hundred nine children completed the dietary journals, fifty-three percent were male and forty-seven percent were female. The children appeared to eat healthier on weekdays, as they had a higher frequency of consuming foods and beverages; a higher frequency of consuming food and beverages from MyPyramid food groups; and a lower frequency of consuming food and beverages from MyPyramid discretionary calories. On the weekend, family members and fast food/restaurant places more frequently prepared the food and beverages children consumed. Based on the results of this study, the researcher suggests children need nutrition education on preparing food and how to choose healthful foods both at home and away from home.


This project spanned three studies. Study I tested the feasibility of an innovative approach whereby the whole wheat content of bread products in school lunches was gradually increased to enhance whole grain intake by children, and it was determined that a gradual increase in whole wheat content in menu items resulted in favorable whole grain consumption by children.

Study II involved the development and testing of an instrument created to measure the influence of psychosocial variables on children's whole grain consumption. Ninety-eight children in one elementary school participated in one 24 hour dietary recall interview and completed a
questionnaire measuring self-efficacy, outcome expectations, preferences and knowledge on two occasions. Seventy-six parents completed a home inventory checklist to assess the availability of whole grain foods. Home availability was significantly related to whole grain intake, while psychosocial variables were not. Availability in the home may be a more important variable associated with whole grain intake than preferences, self-efficacy and outcome expectations.

Study III used video recordings of cafeteria lunches to investigate children's whole grain eating behaviors. Approximately 90 children were taped while eating a variety of grain foods including whole grain products served in a typical elementary school lunch. Desserts made with grains, such as cookies and cakes, were taken by twice as many children when offered with a pizza meal compared to when fruits were served as a dessert. Differences in consumption of the main entrée approached significance when consumed with desserts made with grains compared to fruit desserts. This baseline can provide a foundation for further exploration of the use and acceptability of foods in school meals at the elementary school level.


The purpose of this study was to determine the effectiveness of various nutrition education methods in teaching overweight 10-14 year-old children to make healthier food choices. Twenty-four adolescents in West Virginia were recruited through schools, physician offices, and community programs to attend a two-week residential lifestyle-modification camp with three follow-up weekends over the next 12 months. Prior to attending the initial camp session, subjects were asked to complete a three-day diet journal. Three-months later, subjects were asked to complete a three-day diet journal before coming to the first follow-up weekend.

The camp included four fifty-minute nutrition education lessons that focused on the Plate Method and 'Always' food choices vs. 'Sometimes' or 'Sparing' food choices. Diet records prior to camp indicated subjects were not meeting recommendations for servings of fruits, vegetables, milk, or whole grains, but were exceeding recommendations for soda/sweetened drinks and high fat/sugar foods. Diet records at follow-up indicate that on average subjects significantly increased fruit intake and significantly decreased soda/sweetened drink intake when compared to pre-camp diet journals. Diet records at follow-up indicate improvement in the number of times subjects reported eating vegetables, whole grains, and not eating high fat/sugar foods. The study concludes that using a two-week residential camp to provide nutrition education is an effective way to help overweight adolescents make healthier food choices at snack- and meal-times.
NUTRITION EDUCATION


The purposes of this study were to evaluate "Healthy Moves for Healthy Children (HMHC)" project and to develop a nutrition education program for parents of children enrolled in Head Start school. In 2005, Head Start teachers received HMHC in-service training and were provided with materials to implement HMHC throughout the year. One year later, a qualitative study was conducted to assess the benefits of the HMHC program. Two focus groups were conducted with Head Start teachers (n=14) in Decatur, IL. Results showed that teachers perceived the curriculum as an important source of new ideas, convenient and easy to use. Two focus groups with Head Start parents (n=14) were conducted in Decatur, IL using predetermined questions. Findings showed that parents understood the causes of childhood overweight, and that eating habits are learned early from adult role models. Because parents preferred visual education, a DVD nutrition education program was developed. Head Start parents (n=16) watched the DVD and were given pretest and posttest questionnaires. Parents were inspired by the DVD to make changes; however, 4-6 week follow-up data could not show changes possibly due to the sample size (n=11). Additionally, one-time intervention is not likely to change behavior. Therefore, future recommendations include working with a larger sample size to assess the program.


The purpose of this study was to explore how health literacy initiatives at Burnaby Central Secondary School have influenced the eating habits and health literacy of students in the eleventh-grade. The health literacy initiatives included the following: cafeteria menu revisions, daily health tips announced on the school public address system and inserted in the classroom bulletins created by the healthy literacy task force, changes to vending machines food and beverage choices, and teacher follow-up and discussions about health tips. Project results demonstrate how changing food policies and creating a health literacy climate in a school directly influences student purchasing and eating habits.


This study evaluated the impact of an OCES Nutrition Education Program, *The Story of Benny the Traveling Bean*, on first grade children's willingness to try foods containing legumes. The
sample was thirty-eight first grade children in a rural Oklahoma town. Data from the pre, post, follow-up design tracked snacks put on plates and snacks tasted. During the first and third weeks, students only participated in snack tasting and observation. During the second week, the intervention group was read *The Story of Benny the Traveling Bean*, and the control group was read a non-food related book. After the stories, students participated in snack tasting and observation. Four snacks were provided at each data collection period; two containing legumes, and two not containing legumes. Frequency of children taking and tasting legume and non-legume snacks between the intervention and control groups at pre, post, and follow-up were analyzed using chi-square analysis. Significance was set at p.0.05. The frequency of changes in children taking and tasting legume and non-legume snacks from pre to post, post to follow-up, and pre to follow-up between the intervention and control group were also analyzed using chi-square analysis, and there were no significant differences in the frequency of children taking and tasting legume and non-legume snacks between the intervention and control groups.


This study examined the influence of the SPIN (Strength and Power in Nutrition) nutrition education intervention on the food and beverage purchasing decision-making processes on tweens in "hot" (high emotional stimulation) and "cold" (low emotional stimulation) situations. The twelve participants who completed the study were 11-14 year-old, low-income, ethnically diverse tweens. The study took place at an after-school program at a Western Massachusetts Boys and Girls Club and a grocery store across the street. Participants were given two dollars to spend on three consecutive weeks before and three consecutive weeks after the intervention. Participants used tape recorders to document their thoughts while selecting food items. After shopping, they wrote down their reason for their purchase. Participants also completed pre- and post-intervention questionnaires regarding nutrition knowledge and perceived influences on food purchasing decisions. Tweens shopped alone on weeks one and three and with a friend on week two. Food and beverage decision-making themes and outcomes were compared during various levels of "cold" (low emotional stimulation) and "hot" (high emotional stimulation) situations. The SPIN intervention resulted in decision-making and behavior change in "hot" situations. Additional studies with larger sample sizes are needed.


This study assessed the effectiveness of the *Food and Fun for Everyone* curriculum used by Community Nutrition Education Programs (CNEP) in bringing about positive, self-reported dietary behavior changes in third and fourth grade students. Data from this quantitative, quasi-experimental study came from 746 repeated measure surveys obtained from a purposive sample within CNEP units throughout Oklahoma. The pre- and post-surveys evaluated eight behaviors...
related to the lessons and employed a three point Likert scale to evaluate behavior change. Paired t tests were run to identify significant behavior changes from pre-test to post-test. A one-way ANOVA was conducted to determine significant differences in behavior change. Interviews of Nutrition Education Assistants (NEAs), who presented the lessons series, were conducted to ascertain their fidelity to the curriculum protocol. Content analysis was performed to identify consistent breaches. Third grade students reported positive, significant behavior changes for six of the eight behaviors, and fourth grade students reported positive, significant changes in seven of the eight behaviors. The one-way ANOVA identified the only significantly different behavior between third and fourth grade students as "I eat green or orange vegetables every day," with third grade students reporting a greater mean change between the pre- and post-survey. This study concludes that the Food and Fun for Everyone nutrition education program proved to be effective in leading to positive self-reported dietary behavior changes in Oklahoma third and fourth grade students participating in CNEP.


This study evaluated whether selected nutrition education lessons from the Up for the Challenge: Health, Fitness, and Nutrition curriculum could change knowledge, attitudes and behaviors about nutrition with low-income youth in afterschool programs. Participants included eighty-six youth in two afterschool programs receiving nutrition education lessons through the Expanded Food and Nutrition Education Program of Penn State Nutrition Links. A quasi-experimental design consisting of pretest-posttest comparison control group was used. The intervention in this study consisted of six nutrition lessons from the curriculum. Three measurements were taken at pretest, posttest, and delayed posttest. Hands-on nutrition education lessons were taught to youth in the treatment group each week over a four-week period. The control group did not receive any lessons.

Results showed that youth who received nutrition education lessons significantly improved their nutrition knowledge, attitudes, and nutrition behaviors compared to those who did not participate in the lessons. Physical activity knowledge and physical activity behaviors also improved from pretest to posttest and delayed posttest. The significant improvement for nutrition knowledge and physical activity knowledge, attitudes, and nutrition behaviors and physical activity behaviors indicated program effectiveness.


The purpose of this study was to increase vegetable consumption and preference in elementary school-aged children ages 5-11 using interventions of flavor-flavor conditioning and a sensory-based, vegetable-themed education. In both interventions, increase in consumption was measured by observing children at a vegetable buffet, and their preferences were measured with a survey.
In the flavor-flavor intervention, children were exposed to sweetened and non-sweetened vegetable purees. Preferences were assessed prior to intervention. Children received a posttest immediately after the final conditioning and again 2 to 3 weeks later. Flavor-flavor conditioning was not an effective strategy to increase whole vegetable consumption or preference. The vegetable-themed curriculum focused on four vegetables (carrots, peas, cauliflower, broccoli) and included three 30-minute lessons on each vegetable. Lessons were taught once per week for 3 weeks each month over four months to children enrolled in an after-school program at one elementary school. Vegetable consumption was observed at a vegetable buffet pre- and post-intervention. The education intervention was associated with increased consumption of carrots and peas but not cauliflower or broccoli. There was no change in vegetable-related attitudes/behaviors post-intervention. The results support the use of sensory-based, vegetable-themed education to increase vegetable consumption among children. Future studies should involve a larger sample size and should consider in-school rather than after-school education.


The purpose of this study was to describe the implementation process of a middle school nutrition education program, “Choice, Control & Change (C3),” and to investigate the link between implementation and intervention outcomes. The C3 curriculum targeted the behavior of increasing physical activity and consumption of fruit, vegetables and water; the curriculum also targeted the behavior of decreasing the consumption of sweetened beverages, packaged snacks, and fast food. Process evaluation measures included training, implementation and reception of program, student satisfaction, teacher characteristics, and school context. Descriptive statistics, non-parametric correlation, hierarchical linear model, and content analysis were used for data analysis. Significant predictors for C3 behaviors and potential mediating variables were implementation, reception of program, and student satisfaction. Implementation and reception of program were significant predictors for student satisfaction. A systematic analysis approach gave a better understanding about the intervention pathway. Professionals who implement future school-based nutrition education and physical activity programs may be able to use this study as a model.


This study took place in Alexandra, Minnesota, and explored the effect of a multi-level, school-based intervention on fifth and sixth grade students. Sixty-five students completed pre- and posttests of knowledge, and then 38 students in the intervention group engaged in a 7-week curriculum that included healthy food choices, the importance of daily physical activity, and basics on how the body expends energy. Motivational posters about healthy decision making were placed in the school building/cafeteria, and parents were sent informative handouts. At the
end of the curriculum, the mean score of the intervention group was significantly higher than the control group. Participants from the intervention group completed pre- and post-behavior surveys to determine if the intervention had an impact on physical activity. They exhibited a significant change in their behavior in several areas of physical activity. The curriculum increased student knowledge in the intervention group and may have increased physical activity levels.


This research project built on a study called *Eating Between the Lines: A Healthy Eating Literacy Program for Preschool Children and their Families (EBTL)* which used a literacy approach to teach children about nutrition. This study built on the premise of literacy as a social practice and that active learning is most effective in early childhood education, only this study included technology as an integral component. Technology-based activities were incorporated into the EBTL program, and included slideshows, Internet, scanners, drawing, and word processing programs. Questionnaires and interviews with parents investigated whether there was knowledge exchange taking place in the home environment. Results show that the children applied new nutrition knowledge while engaging with literacy activities using technology as a literacy tool. The interviews with parents indicated that there was uptake and meaningful transfer in the home environment with parents, siblings, and peers. Future research may include an EBTL home environment component.


This study investigated the effectiveness of instructor type on fourth grade students' fruit and vegetable knowledge and consumption. The purpose was to determine the effectiveness of a dietetics professional's involvement in nutrition education and to compare the teaching effectiveness of a dietetics professional to a credentialed teacher in fourth grade nutrition education. Two groups of elementary students in the Los Angeles Unified School District participated in the study. One group of 22 students participated in nutrition lessons taught by their classroom teacher, and 23 students in lessons taught by a dietetics professional. The students completed a survey and food diary before and after the lessons. No significant difference was found in survey scores or servings of fruits and vegetables, indicating that instructor type has no bearing on student learning. The research suggests that dietetics may be equally as effective as a classroom teacher in teaching nutrition in the classroom.

This case study used a descriptive mixed method approach to examine two classes of sixth grade students' responses to concept-oriented reading instruction (CORI) in nutrition education. The CORI framework was designed to increase student reading motivation, strategy usage, and conceptual learning, and has been used in science education. Each class participated in a six-day CORI nutrition unit. Pre- and post- nutrition concept and skill questionnaires, pre and post student interest surveys, observations and field notes, and student artifacts were used to determine the following: the extent to which students acquired conceptual knowledge; the extent to which students could apply a health skill; ways the use of CORI in nutrition education engaged students, and what students found interesting about the reading informational and narrative texts provided in a CORI health class. Students in case one experienced significant gains in concept acquisition, with no significant gains in case two. There was no statistically significant evidence to suggest that the CORI unit affected students' skill acquisition and application. Survey responses suggested a high level of interest in the hands-on activities, and qualitative data reported specific interest in the reading activities. Quantitative data indicate increases in students' interest in information texts and using texts to find new information; however, quantitative data also suggest there is no change after a CORI nutrition unit in students' self-reported persistence even though a text is difficult to read. Qualitative data suggest an increase in student engagement in the CORI hands-on activities, reading assignments, cognitive processing of the material, and application in authentic tasks.


This study used survey methodology to assess the extent to which teacher-led nutrition education occurs in classrooms, the content and methods used to present nutrition information to students, and the factors that support teacher-led nutrition instruction. One hundred thirty nine teachers from 18 New York State public elementary schools in urban, suburban, and rural areas participated in the survey.

These teachers taught approximately nine hours of nutrition during the 2007-08 school year, and topics included healthy food choices, diet and health, the food pyramid, dietary guidelines and nutrients and their food sources. More than 70% of teachers reported incorporating nutrition instruction with core subject areas, mostly health/physical education and science. Teachers at suburban schools and at schools with less than 80% non-white students spent the greatest amount of time teaching nutrition compared to rural schools and schools with greater ethnic diversity. Teachers who felt prepared to teach nutrition and who felt they were supported by school district/administration taught significantly more hours of nutrition than teachers who did not, and teachers who reported having access to adequate instructional and reference materials also taught significantly more nutrition than those who did not.
All teachers believed that nutrition education is important and they expressed a desire for coordinated curriculum and training opportunities to encourage and support instruction. This study concluded that the overall amount of time spent teaching nutrition in elementary schools is well below what is recommended, and teachers would benefit from more nutrition education training and resources. More research is recommended to focus on teachers in urban areas, and those with more non-white students.

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**OVERWEIGHT/OBESITY**


This purpose of this study was to determine whether frontline workers in the public education and public health sectors are interested in and willing to work together to solve the problem of childhood obesity. A series of focus groups was conducted to explore the potential of interagency collaborations between public education and public health. These focus groups took place at education and health agencies in an area where childhood obesity is of concern to public policy makers. This study sought to determine the following: how agency members frame childhood obesity and whether they frame the issues in a similar fashion; what they view as the main barriers to interagency collaborations; and whether they have had experiences in and express a willingness to participate in such collaborations.

Both the public education and public health agency representatives agreed about what factors lead to childhood obesity, but their opinions differed in how to address childhood obesity in the agency setting. There are also limitations to these agencies' participation in interagency collaborations which are beyond their control, such as time constraints and agency support. The participants indicated that current interaction across agency boundaries between frontline workers is rare, but participants contended that internal informal networks exist which could become a framework to include frontline workers from other agencies. The study concludes that it is important to sustain awareness of childhood obesity with state policy makers and agency decision makers, and that coordination between state policy makers and agency champions is needed to identify resources and policies necessary to implement interagency collaborations. State-level funding is needed for public managers to commit to allowing frontline workers to participate in interagency collaborations.

This study sought to determine whether participation in a multi-component school-based intervention had an effect on health markers, body composition, physical fitness, and psychological measures for overweight/obese adolescent females. The intervention incorporated circuit-resistance training, dietary intervention and behavioral modification. Forty-two overweight/obese adolescents participated in the 10-week program with assessments completed at 0, 10, and 22 weeks, and data were analyzed by ANOVA repeated measures analysis.

Statistically significant group x time interactions were observed for the following: body mass, fat mass, percent fat, triglycerides, HOMA-IR, physical activity environmental factors, fruit and vegetable decisions, and dietary protein intake. Time significance represented an overall mean increase in body mass, lean mass, bone mineral content and bone mineral density. Follow-up testing was conducted with a subset of participants after three months, and participants revealed statistically significant group x time effects for the pediatric quality of life psychosocial health summary score and the PACE measurements of physical activity family support. This study indicates overweight/obese adolescent females can benefit from both standard physical education and a multi-component program.


This study examined pediatrician and family physician adherence to the 2007 Expert Committee recommendations for assessing and treating childhood overweight and obesity. A survey based on expert panel recommendations was created and distributed to physicians in rural, suburban, and urban areas in the states of Kansas and Missouri. The survey was distributed both via an online survey website and at two local medical conferences. In total, 202 participants enrolled in the study. Global adherence increased over adherence to previously-published recommendations. Physician use of BMI-for-age charts increased for physicians over use found in previous studies. Global adherence was greater with physician awareness of the guidelines, and physician self-efficacy was positively associated with adherence. No differences were found between pediatricians and family physicians in global adherence rates and no differences were found between physicians practicing in urban, suburban, or rural areas. Study results suggest that efforts to improve adherence should focus on improving physician awareness of the practice guidelines and on training physicians in assessing pediatric weight problems and counseling patients and their parents on diet and exercise.

This study examined elementary school nurses' perceived roles, activities, efficacy expectations, outcome expectations, perceived benefits and barriers in the measurement of BMI in students in those schools with a mandated BMI policy versus those schools without a mandated policy. The study also determined which stage of the Stages of Change schools/districts were in regarding measuring BMI. A valid and reliable survey of 28 items was sent electronically to a national sample of 8,493 school nurses who were listed in the National Association of School Nurse database. A seven-wave electronic procedure with a drawing for a financial incentive was utilized. The response rate was 42%. Sixty-seven percent surveyed believed nurses should measure BMI in schools, 62% believed BMI results should be sent home, and 81% believed nurses should be designing programs to help with child overweight issues. Only 31% of the nurses believed that measuring BMI was psychologically or socially damaging to the child. Seventy-three percent of the nurses believed measuring BMI creates awareness of the obesity problem, and 72% believed measuring BMI provided evidence to change policies to help reduce obesity levels. Inadequate school resources and inadequate or inappropriate parental responses were identified as the largest barriers to measuring BMI. Ninety four percent of school nurses stated they were confident or very confident in measuring height and weight, and 74% stated they were confident or very confident in converting height and weight to BMI. Ninety three percent felt confident to very confident in helping parents interpret BMI findings. School nurses in schools with a mandate were measuring BMI for a year or more at a significantly higher rate than those nurses in schools without a mandate.


Overweight adolescents who are at risk for type two diabetes mellitus (T2DM) may have increased levels of emotional eating, and poor self-esteem and body image. The possibility for major psychological issues exists. This pilot study ("R. U. A Healthy Kid") was an intervention that targeted four main topics: Family Meals, Healthy Snacks, Physical Activity and “Unique U” (emotional eating, self-esteem, body image and stress management). Seventeen free-living middle school students at risk for T2DM participated in the program. After three months in the program, participants’ self-esteem significantly increased. Many relationships were found between self-esteem, body image, stress and emotional eating questions. Community-based lifestyle interventions that include issues such as improving self-esteem, body image, stress and emotional eating are critical in helping adolescents who are "at-risk" for T2DM.

This study identified the impact of policies regarding mandatory physical exercise and a sugar-free lunch menu on students’ Criterion-Referenced Competency Test (CRCT) achievement in reading, English, social studies, mathematics, and science. The study sought to determine whether 108 students enrolled in Grade 5 in an obesity treatment elementary school (Group A) achieved higher levels on the CRCT than 432 Grade 5 students (Group B) enrolled in four traditional elementary schools in the same school district. Study findings do not indicate a significant association between the school attended and achievement levels in reading, English, mathematics, or science, but a significant association was found between social studies and type of school.


This multi-phase study was conducted in Broome County, New York on sixth-grade children in three middle schools. The first phase involved a survey of overweight and obesity, and results showed that 45.7% of all children were overweight or obese. There was no difference between percentages of overweight or obesity between boys and girls, and immigration status did not affect health status. The second phase involved a survey that addressed diet, physical activity and inactivity patterns. The third phase involved observations of mid-day meal behaviors at each school, with a focus on the consumption, exchange and discarding of food. Information from these phases determined that consuming unhealthy foods was one of the most important contributing factors to overweight and obesity. Some unhealthful food items were served in school, some were brought to school from home, and some were eaten at home or were available in the community. Immigration status did not affect diet, physical activity or physical inactivity patterns. This suggests migrant children are acculturating to the U.S. diet and U.S. physical activity and inactivity patterns. Lastly, this study developed an intervention and prevention program with components that can be implemented in school, home, and in the community.


The purpose of this study was to examine the effects of a three-component intervention model, Life Fit on three 9 to 10 year old females who were overweight. The 10 week intervention consisted of two 2 hour sessions per week. The sessions covered nutritional education, physical fitness, and cognitive-behavioral therapy. This research was conducted as a single case study AB design. Data was collected on each of the following variables: nutritional measures (self-reported servings of fruits and vegetables and number of servings of sweetened beverages and sodas),
physical fitness (cardio respiratory endurance, upper body muscular strength and abdominal strength), anthropometric measure (BMI), physical activity levels (average daily pedometer counts), sedentary activity levels (number of self-reported hours in specific sedentary activities), self-concept and body image. Study results yielded improved upper body endurance and cardio respiratory fitness for participants, but all participants maintained their pre-intervention BMI, and there were no improvements noted in the other measures.


The purpose of this study was to identify BMI screening practices of school nurses (SNs) and to identify facilitating factors and barriers to BMI screening in public elementary schools. Focus groups were used to identify current BMI screening practice in terms of facilitating factors and barriers. Survey methods were used to determine the validity of the barriers and facilitating factors identified in the focus groups. An adapted version of the Health People 2010 Determinants of Health Model guided this research. Three focus groups with SNs were conducted. Results indicated BMI screening was conditional to policy, school social and physical environments, risk/protection, and access to quality health care. All SNs described teachers as the most important facilitating factor. Suburban SNs also identified gym teachers as important to BMI screening. Primary barriers voiced by SNs included lack of privacy, time, and policy. A survey entitled the “Body Mass Index Screening Survey” was developed to allow for a more thorough assessment of SN BMI screening practices. It is recommended to administer the survey to a randomly selected group of SNs so that data can be used to support policy and obesity intervention standards for the care of school-aged children.


This study evaluated the effects of the Choosing Health and Sensible Exercise (C.H.A.S.E.) childhood obesity prevention program on Body Mass Index (BMI), physical activity and dietary behaviors of 65 students who participated during the fall 2006 session of the C.H.A.S.E. program. The C.H.A.S.E. program is a 10-week obesity prevention program that focuses on nutrition and physical activity education. Height and weight data was collected, and a health behavior survey was conducted during the first and last week of the intervention. Paired t-tests were used to determine statistically significant differences between pre- and post-intervention measurements, and one-way analysis of variance was used to adjust for potential confounders, such as gender, age, BMI, and self-reported weight loss goals. A significant decrease in mean BMI was found after the intervention. The mean overall scores for the behavior survey did not change significantly pre- and post-intervention; however, significant differences were found in the dietary intention scale, indicating that students were more likely to intend to make healthier food choices. Evaluation results provide useful information for planning and implementing
effective future childhood obesity interventions, and also prove the effectiveness of the C.H.A.S.E. program in modifying food choice selection and decreasing BMI.


This two-part research project examines factors associated with childhood obesity in the United States. This study uses a national longitudinal dataset “Early Childhood Longitudinal Study, Kindergarten-Fifth Grade,” containing data for 12,719 children from fall 1998 (Kindergarten year) through spring 2004 (Fifth grade), with additional information from the U.S. Census and the Bureau of Labor Statistics. The first part of this dissertation identifies economic, environmental, and endowment effects on childhood obesity; the second examines the relationship between childhood malnutrition, both underweight and overweight, on school performance.

Results from the first part of the study indicate that the likelihood of childhood obesity increases with the higher number of working hours per week by parent(s), lower level of parents' socioeconomic status, fewer number of siblings, higher child birth weight, and minority status. Less-healthy parents, school lunch participation, and fewer physical activities are correlated with the higher likelihood of children being overweight. The results from the second part show that malnourished children, either underweight or overweight, achieve lower scores on standardized tests. Overall, this study emphasizes the need to reduce childhood malnutrition and childhood obesity. This study concludes that a combination of government policies, parents' time commitment, and school's involvement are all are needed to address these problems.

**PHYSICAL EDUCATION & ACTIVITY**


This study sought to gain a deeper understanding of barriers to physical activity in the Mississippi Delta. Six elementary schools participated in the study. Focus groups, comprised of forty-four parents and guardians of elementary aged children, were conducted to discuss current physical activity levels and factors impacting and limiting local children's physical activity levels. The most frequently reported barriers were related to environment, such as fear of children's safety, lack of resources, and individual and social constraints such as time, parental influences, and television viewing. The most frequently mentioned issue was concerns about safety and violence.

The purpose of this study was to assess the effectiveness of the Teens Reaching Youth (TRY) 4-H model at delivering nutrition and physical activity education to youth. The TRY 4-H program’s objectives were to increase youth participants' nutritional knowledge, improve youth participants' eating and fitness habits, and improve leadership and life skills of teens. Three groups of youth grades third through sixth in Northern Utah participated in the study. The youth's nutrition knowledge and food preferences, as well as their parents/guardians' behaviors, were examined. Then, two of the groups participated in a nutrition and physical activity education program. One group was taught by TRY 4-H teams and the other group was taught by adult volunteers from the community. The youth's nutrition knowledge and food preferences and their parents/guardians' behaviors were re-assessed after participating in the program, but the control group was unavailable for re-assessment. Teen leadership was assessed using a teen leadership and life skills assessment tool. At baseline, the three samples had no statistical differences. The TRY 4-H treatment and Adult Volunteer treatment were found to produce statistically similar nutrition knowledge outcomes. Parents/guardians reported improvements in youth participant nutrition and physical activity habits. Teen members of the TRY teams experienced an increase in leadership and life skills. Teens from the TRY 4-H program are as effective as adult volunteers at teaching younger youth about nutrition.

**PROCUREMENT**


The purpose of this study was to identify key attributes that affect a school nutrition program's willingness to adopt technology for supply chain management (SCM) in order to improve efficiency and reduce costs. An online survey was used to gather data from the 500 school districts with the highest enrollment in the United States. Using a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*) the survey gathered data from school nutrition program professionals about their supply chain, information orientations, and their willingness to engage in technology-enabled SCM initiatives. The response rate was 31.8%.

Descriptive statistics were used to analyze demographic traits of the respondents and their school districts. Typical respondents were females, 51-60 years old, with an advanced college degree and 20 or more years of foodservice experience. On average, the respondent's school nutrition program was operated by the school district (92.4%); employed fewer than 500 workers (77.3%);
was financially solvent (71.5%); and did not centralize food purchasing (60.2%), production (84.7%), or delivery functions (60.2%). Survey results revealed that respondents extensively use software in their departments. Respondents also use software to exchange information with other departments in the school district, with other members of their supply chain, and also with their customers. In general, respondents were willing to adopt technology for SCM initiatives $(M = 3.98)$.


This study used focus group and survey data to identify the purchasing practices used by the largest 100 school districts, and to also gain perspective on the industry's perception of school purchasing practices. This study had three main focuses: to determine if the largest 100 school districts vary in their responses based on school district enrollment, student eligibility for free/reduced meal benefits, and presence of a state or local wellness policy; to assess whether or not industry suppliers differ in their perceptions of what the largest 100 school districts want or need based on the type of products or services they supply to schools, and annual sales to schools; and to examine agreement or gaps in food purchasing practices by foodservice professionals and what industry representatives perceive foodservice professionals want or need when purchasing foods in Child Nutrition Programs.

Findings indicate there are no differences between school districts based on size or student eligibility for free or reduced-price meals. School districts with a state or local wellness policy reported stronger agreement than those without a policy on some factors related to nutritional characteristics of food items. Companies supplying food and the largest companies in the study reported stronger agreement than non-food companies and smaller companies on some factors they perceived in school foodservice purchasing decisions. Gaps were identified between foodservice and industry participants' responses. Foodservice participants indicated stronger agreement on eight factors than what industry respondents perceived, which suggests a need for stronger communication between foodservice participants and industry.


The Child Nutrition Labeling program provides food manufacturers the option to include a standardized label with information regarding the item's contribution to National School Lunch Program meal pattern requirements. This study uses an index created by Wagner, Senauer, and Runge to evaluate how closely school lunch menus come to offering and serving lunches that meet the federal standards for meals served in schools. Using a regression model, this study predicts the nutrition index score based on school lunch purchasing and planning decisions, including the impact of district policies mandating the purchasing of Child Nutrition labeled foods. Results show that the decision to limit some or all purchased foods to those carrying a
Child Nutrition label has a significant and positive impact on Wagner, Senauer and Runge index scores for middle and high schools, and has a negative to no impact on the score of elementary schools. These results suggest that the Child Nutrition Label program helps some schools produce meals that are closer to the federal standard.

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**SCHOOL LUNCH**


Point-of-sale machines are used in most school cafeterias to help streamline the process of purchasing school lunches, and the software allows school personnel to place special notes on student's accounts to provide alerts about parental requests. This study investigated what the alerts are used for, who uses the alerts, and if there are any patterns by demographic characteristics. Counts and percentages were used to determine what the alerts were used for and who used them. Students who were most likely to have alerts placed on their accounts were white non-Hispanic, paid status, or in elementary school. The majority of alerts were used as allowances (i.e., allowed to purchase snacks from the balance on the school lunch account), rather than restrictions (i.e., restricted from purchasing high calorie foods or specific food items). A total of 688 alerts were analyzed, and there were significant differences in alert frequencies for intent category by grade level, snack access, and gender. A significant relationship between gender, grade level, and snack access, and the presence of an alert on the school lunch account was identified. Study results can assist school administrators to better understand that a point-of-sale alert program may help their school lunch programs run more efficiently, while also providing parental influence on students' food choices at the point-of-sale.


The purpose of this study was to compare the nutrient content of school-bought lunches and packed lunches, as consumed by high school students. Calories, protein, fat, saturated fat, carbohydrates, fiber, sugar, vitamin A, vitamin C, calcium, iron, and sodium were compared. Additionally, differences in these nutrients based on age, gender, and ethnicity were explored. Data were collected using digital photography to capture images of complete lunches and plate waste from 56 lunches. School lunches contained significantly more calcium and less sugar than packed lunches. Age and ethnicity were identified were found to be non-significant after the calories were controlled.

The purpose of this study was to assess the quality of dietary intake at school lunch based on socioeconomic status (SES). In the 2005-2006 school year, randomly selected, anonymous students enrolled in low- and middle-SES schools in Harris County, Texas, participated in this study by completing weekly lunch records. A total of 6,756 lunch records were completed, and then analyzed for nutrient and food group intake. Independent t-tests of the collected data showed a significant difference ($p < .05$) in lunch consumption based on SES. Students attending low-SES schools had greater reported intake of protein, vitamin A, vitamin C, and calcium, and less intake of energy, total fat, and iron than the middle-SES school students. Low-SES school students also consumed fewer foods of minimal nutritional value. Students at both SES levels failed to meet overall nutritional guidelines set by National School Lunch Program.


The purpose of this study was to examine the effects of nutritional standards implemented in three public high schools in one Virginia County. This study compared the nutritional value of competitive food offerings and purchases before and after the implementation of the standards. A stoplight approach of green, yellow, and red colors was used to label foods based on their nutritional density. After implementation of the guidelines, red foods made up 30% of offerings, which was down from 48% of offerings prior to the implementation. Red food purchases also decreased, from 83% to 47%. Yellow food offerings increased from 18% to 48%, and purchases increased from 6% to 34%. These results indicate these nutritional standards contributed to a positive shift in the nutritional value of competitive food purchases and offerings.


The purpose of this initiative was to help schools enhance the nutritional quality of their school lunch meals by making them consistent with the selected United States Dietary Guidelines. Study findings address the question of whether serving meals consistent with School Meals Initiative for Healthy Children (SMI) translates into desirable consumption by those participating in school lunch. Findings also show the need for decreased sodium in foods served through school lunch, increased fruit and vegetable intake, and increased availability and consumption of whole grains. This study's evaluation of plate waste from school lunches served to students suggests good acceptance by children to eat foods with more desirable nutritional profiles, but results indicate a need for strategies to reduce plate waste of vegetables and fruits for school lunch meals, because these foods were most likely to be discarded and un-eaten. This study also examined the nutritional quality of bag lunches brought from home compared to school lunches.
Study results suggest that school lunch offerings appear to be better than what parents are providing in meals brought from home. Perhaps parents should be encouraged to have their children participate in the school lunch program, or parent education may assist parents in packing more healthful lunches for their children.


The purpose of this study was to determine whether recent federal policy is associated with a reduction in childhood overweight and obesity rates. Results from the National Health and Nutrition Examination Survey (NHANES) were used. Preliminary and descriptive statistics on the National School Lunch Program's participants between the years 2003-2004 and 2005-2006 do not indicate a shift in obesity, yet further examination will be needed to determine whether the rates of obesity among participants have changed in recent years. Future study will use household income, grade level, and other demographic variables to determine whether participants in the National School Lunch Program in 2005-2006 have lower Body Mass Indexes (BMI) on average compared with participating students in 2003-2004.

SPECIAL FOOD AND/OR NUTRITION NEEDS


This project studied a community-based intervention to determine which factors were most likely to influence positive anthropometric outcomes, and to identify which components were most valued by participants and parents. Results of this study could be used in developing successful interventions for adolescents "at-risk" for type 2 diabetes mellitus (T2DM). A significant decrease in body fat percentage and significant increase in muscle mass was found from baseline to three months. The number of servings of vegetables per day was significantly related to an increase in body fat percentage and a significant decrease in muscle mass. Education and income were found to have a positive significant relationship, while education and fat percentage have a negative significant relationship. To determine which intervention components were considered most valuable, the goal was to identify components should be used, which should be revised, and which should be removed. When the parents were asked about attending the fitness centers, 86.7% responded "continue," and 13.3% responded "revise." To the question regarding weekly phone calls, 53.3% of the parents responded "continue," 33.3% responded "revise," and 13.3% responded "discontinue." When the parents were asked about learning about healthy snacks, 100% responded "continue." The questions to parents regarding learning about body image, 80% responded "continue," and 20% responded "revise." Participants identified the most valuable
components of the program as physical activities and the fact that they "liked it all." The parents reported it was valuable that their child were involved, attending a fitness center, and receiving nutrition information. This study concludes that community-based lifestyle interventions are critical in helping adolescents who are "at-risk" for T2DM.


The purpose of this study was to assess the effectiveness of the Texas Children's Saturday Wellness Program on the weight status, nutrition knowledge, and frequency of physical activity of children who participated in the program. A secondary data analysis was conducted with 50 children with special health care needs and their families who participated in the program during 2007 and 2008. A pre post-test study design was used with data collected immediately before and after participation in the program. Data collected included demographics, anthropometrics, a quality of life survey focusing on nutrition and physical activity behaviors, and a knowledge survey on physical activity and nutrition. Of 50 participants, 33 (66%) completed the program. Children showed a significant decrease in BMI, as well as frequency of physical activity and knowledge. Texas Children's Hospital's wellness program for children with special health care needs provided a promising structure for a wellness program within a multi-ethnic special needs population; however, long term effect research is needed with a larger sample size and more comprehensive outcomes and process measures. The study concludes that this program points to the effectiveness and feasibility of a family-based approach to weight loss in children with special needs.


The purpose of this pilot study, "R .U. A. Healthy Kid?" was to examine middle school students "at risk" for type two diabetes and their lifestyle factors, including family meals, physical activity, and "screen time." Ultimately this could be used to reduce their risk through a community-based intervention. From baseline, a significant negative correlation was found between "screen time" levels and fruit and vegetable intake, and a significant positive correlation between "screen time" levels and physical activity levels. At three months, a significant positive correlation was found between family meals at home and vegetable intake increased and a significant positive correlation between family meal frequency increased and physical activity levels. From baseline to three months, frequency of family meals at home decreased. Improving "at risk" adolescent's behaviors related to family meals, physical activity, and "screen time" levels are critical while developing successful interventions for adolescents "at risk" for type two diabetes.
WELLNESS


This study evaluated a teacher professional development program by interviewing fourteen teachers, focusing questions on knowledge, attitudes, and behaviors related to nutrition, diabetes, obesity, and physical exercise. Emergent themes were created, and teachers were categorized into the transtheoretical model's stages of change and three typologies: successful maintenance, striving for balance, and stuck in precontemplation. Teachers in the successful maintenance typology were knowledgeable and demonstrated high levels of self-efficacy. Teachers in the striving for balance typology cited barriers that prevented them from engaging in healthy behaviors. The teacher categorized as stuck in precontemplation discussed obstacles including placing her spouse and children before her needs. With multiple influences in the teacher's lives, the effects of the program cannot be verified nor can the other influences be controlled, but the program raised awareness and increased knowledge. This study concluded that knowledge alone is not sufficient to change behavior, and that teachers who were successful had made personal commitments to healthy behavior.


This study sought to determine if any changes in BMI and self-esteem among middle school students at the J. Larry Newton School in Fairhope, AL were a result of the mandatory nutrition guidelines as set forth in the new state school board-mandated *Wellness Policy on Nutrition and Physical Activity* of Baldwin County as of August 2006. A pilot study was performed at the J. Larry Newton School in May 2006, and the actual study was performed during the 2006-2007 school year. BMI measures and the Rosenberg Self-Esteem Survey were administered to 143 students for the first three consecutive months of the implementation of the new nutrition guidelines. SPSS 13.0 software was used to calculate the data collected over the three-month study. Study results indicated no statistically significant change in BMI or self-esteem for the first three months of the school nutrition changes.

This study evaluated an after-school health education and physical activity program conducted in nine elementary schools in 2008 in El Paso, Texas. Body Mass Index (BMI), aerobic capacity, health knowledge, and intentions to eat healthy were the main outcome variables. The intervention took place twice a week after school for 10-12 weeks, and consisted of a pilot study and a main intervention, with the main intervention having six schools, each including a control group and an experimental group. Most participants were socio-economically disadvantaged Hispanic children enrolled in third and fifth grade. The intervention was successful in recruitment, implementation and retention of participants, with an 82% retention rate. A significant reduction in BMI and increased aerobic capacity was found in the pilot study, but no significant increases in health knowledge and intentions to eat healthy. In the main intervention, experimental group participants reduced their BMI, but it was not significantly larger than the control group. The intervention group participants significantly increased their intentions to eat healthy foods compared to control group participants, but no differences for health knowledge were found. While the findings in regards to changes in health indicators were modest, all findings were in the expected positive direction, and provide evidence of a strong need and a desire to participate in projects that are accessible and address primary prevention of chronic diseases.


This dissertation evaluates the impact of elementary school policies on child health behaviors and obesity in the United States, investigating nutrition policies, physical activity policies, and health care cost savings. This study uses large national datasets to investigate disparities by child, school and region. This study found that policies placing restrictions on competitive foods, which are typically low in nutrient value, did have the intended effect of limiting the availability of these foods in schools; however, no impact on obesity was found. One possible explanation is that children respond to restrictions by bringing these food items from outside of the school. In regard to physical activity, this study found that children from disadvantaged backgrounds are more likely to attend schools with poorer gymnasium and playground provisions. The study concludes that even though school policies are a promising tool for obesity prevention, few interventions have proven effective. The study stresses that even a small effect could imply sizeable health benefits over the life-course, citing that a 1% decline in childhood obesity would result in a lifetime savings of one billion dollars.

This study is an overview of the Helping H.A.N.D. (Health Awareness & Nutritious Decisions) program, a socioeconomic focused health initiative. The goal of the program is to improve the diet and activity of West Virginian children from low-income families. This intervention is designed to empower youth with the ability to make informed decisions about their health, and to assist parents in sustaining lifestyle changes. This program also provides baseline data for a longitudinal study to determine long term efficacy. This program can be delivered at a state-wide, county extension office level. The 23-week program took place at an after-school center in Pursglove, WV. Thirty-six children, ages 5-11, received nutrition and physical activity education through their involvement in sessions and activities. Outcomes were assessed via pre/post participation anthropometric data, pre/post FITNESSGRAM skills tests, and DDR participation. The initiative was funded by the 2007 General Mills Champions for Healthy Kids grant.


This study addressed a research gap concerning the implementation of school wellness policies, specifically teachers' perceptions, roles, and experiences. Ten focus groups of teachers were conducted at schools in Nevada's Washoe County School District during the 2006-07 academic year. Elementary, junior high, and high schools participated. Participants' comments were audio recorded and transcribed verbatim, and data were coded using NVivo 7® Qualitative Analysis Software. Eighty-percent inter-coder reliability was achieved. The study addressed teachers’ knowledge of the policy; benefits to students, teachers and the school; barriers to policy implementation; classroom practices impacted by the policy; teachers' roles, responsibilities and health value orientation; support provided during implementation; and subjective norms. Findings indicated teachers supported the policy, but some experienced challenges regarding fundraising and scheduling recess before lunch. The study concludes that more research is needed to determine the level of influence teacher’s knowledge of and their involvement in the development of the school wellness policy affects implementation.


This qualitative study sought to identify the perceptions of student, faculty, and parent stakeholders on school wellness practices, as well as their knowledge of a newly-implemented school health and nutrition policy. The study took place in a suburban high school of 2,000 students, 181 faculty members, and 30 active Parent Teacher Organization parents. A faculty survey, field notes of on-site observations, focus groups, and semi-structured, individualized interviews were used to identify attitudes and experiences with health and nutrition. Findings
from this study point to a need for better policy communication, increased stakeholder involvement, the creation of a wellness council, and meaningful professional development opportunities for faculty.


The purpose of this study was to identify, define, and evaluate the effectiveness of strategies mandated by PL 108-265 for five school districts which were recognized by the United States and New Jersey Department of Agriculture for initiating programs and implementing plans created to reduce childhood obesity. Data was collected through interview and observation processes, and analyses concluded generalizations of the effectiveness of the strategies used by the districts. Emergent themes highlighted by data collection processes expose commonalities among the participating districts' strategies for the achievement of wellness policy goals. Recommendations for the modification and/or examination of participating districts', non-participating school districts' and state department of education's strategies for increased student nutritional intake and physical activity levels are outlined. Detailed conclusions regarding the effectiveness of the commitments participating districts have shown to the implementation, development, and delivery of wellness policy strategies that combat childhood overweight and obesity are provided in this study.


This study provided an overview of several health interventions in Michigan primary and secondary schools. Policies and programs of note were the following: The Healthy School Action Tool; The Healthy Schools Study; and the Coordinated School Health Teams. The study concluded that the relationship between healthy offering policies and practices was inconsistent, and that further investigation is needed to describe the relationship between policies and school healthy eating outcomes.


This mixed methods research explored perceptions of stakeholders within one Southern Rhode Island school district to determine the level of implementation of their Nutrition and Physical Activity Policy. The members of the staff in the targeted district completed a *School Health and Wellness Checklist* available from the state, and three focus group interviews were held with members of the Wellness Committee, Site Councils, and Parent Teacher Organizations. Data
were collected and triangulated to determine the components which correlate with the success of the Wellness Committee. Descriptive and inferential statistics were utilized. Study results show the stakeholders within the district believe the policy has been implemented, and perceive a major barrier for implementation of and compliance with a policy was lack of communication. Other concerns included a lack of staff wellness opportunities, and a lack of physical activity opportunities.


This dissertation provides a descriptive overview of the interpretation and implementation process of a federally mandated wellness policy. Policy administrators were interviewed regarding the wellness policy interpretation process of the State and school district levels. Elementary school teachers were surveyed regarding the implementation of the wellness policy goals in elementary schools and classrooms. Many obstacles to the interpretation and implementation of the wellness policy were identified, including funding, time constraints, pressures of high-stakes testing, and the affect of No Child Left Behind.


This study is an evaluation of the effectiveness of the School Wellness Council Project (SWCP), an initiative formed to promote the creation of wellness councils following the passage of the federal wellness policy mandate. The objectives of this study were to identify whether the SWCP was carried out; to identify relationships between process components, SCWP implementation, and overall wellness activity; and to compare the effectiveness of the program as perceived by the parties involved in implementation. This study used documentation from 20 schools to collect data on nine process components: recruitment, reach, resources, maintenance, implementation, barriers, context, contamination and continued use. Descriptive statistics, correlations, and comparison of mean ranks were used to answer the research questions.

Study results showed that schools involved in the SWCP were able to meet most goals, with the exception of holding monthly meetings. Implementation was significantly related to school food service representatives attending wellness council meetings, participating in the phone training, and to parental influence. No relationships were found between process components and the overall wellness activity score. Barriers identified to forming school wellness councils were lack of time, parental support, and administrative support. The study concludes that the SWCP was implemented with moderate success.

This study explored the attitudes and perceptions of teachers, principals, nutrition service directors, nutrition service supervisors, school nurses, and nutrition specialists toward the implementation of the local school wellness policy in public schools. The study also explored whether there is a perception that school employees/staff responsibilities were affected by the local wellness policy. The subjects in the study responded to a 22-item survey assessing their perspectives in regard to wellness policy implementation. Respondents were 140 individuals who were principals, teachers, directors/supervisors of nutrition services, nutrition specialists/dietitians, or school nurses from 24 school districts. Quantitative data indicated that respondents who were very familiar with the local wellness policy were also familiar with the Child Nutrition and WIC Reauthorization Act of 2004, SB12, and SB965. The findings also revealed a strong correlation between enforcement of the local wellness policy and a positive impact on students and the obesity epidemic. Data from this study also illustrates that stakeholders agree that there is good cause for implementing a local wellness policy, but there is no support to implement the policy.


This study investigated the impact of a local wellness policy in three schools. The policy outlined nutritional standards for competitive food offerings implemented during the 2006-2007 school year. After policy implementation, students in the three schools purchased a significantly smaller number of calories, and grams of fat, saturated fat, and carbohydrates. In the three schools, the prospective savings in daily calories per student ranged from 57-93 calories.
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