

**ADDRESSING CHILDHOOD OBESITY THROUGH SCHOOL-BASED PREVENTION
PROGRAMS**

by

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Abstract

Childhood obesity has become of public health importance because of the powerful, adverse impact it has on our Nation's youth and on the well-being of our society. Childhood obesity affects all aspects of a child's life; most significantly by contributing to poor health and negative social perceptions by society. Extensive research of this issue has identified numerous causal and risk factors associated with obesity. Given the multifaceted nature of the problem, and its severe implications for the future health and well-being of affected children, I believe that the most effective solutions will be achieved through programs that focus on prevention efforts. In the last decade national attention has increasingly focused on efforts to reduce obesity among our youth. Schools have been the primary setting for prevention program, but these efforts have generally been found to be meet with only limited success. Researchers have increasingly focused on other environmental factors such as the home environment and family influences on children's behavior. Recent studies have shown that family and social influences are key determinates of the high incidence rate of childhood obesity. I am proposing to build upon the efforts currently taking place in school districts by implementing a family-based prevention program. The program is an eight-week nutrition and physical education program for middle school students. It is intended that it be implemented within the school environment one evening each week, and that participants include both students and parents. The purpose of this program

is to provide children and their families with nutritional education and to encourage physical activity. The desired outcomes include inducing positive behavioral changes and creating an environment within the home that encourages healthy habits, thereby decreasing the prevalence of childhood obesity within the school community.

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1.0 INTRODUCTION

Childhood obesity has become one of the most predominant health problems facing our nation today. Its prevalence in the United States is such that it is considered an epidemic that has a powerful, adverse impact on the well-being of our society. Childhood obesity affects all aspects of a child's life; most significantly by contributing to poor health and negative social perceptions by society. Extensive research of this issue has identified numerous causal and risk factors associated with obesity. Given the multifaceted nature of the problem, and its severe implications for the future health and well-being of affected children, I believe that the most effective solutions will be achieved through programs that focus on prevention efforts. This thesis begins with a definition of the obesity epidemic, followed by a discussion of research into the multiple causal factors associated with childhood obesity. Particular emphasis is placed on prevention and intervention programs in the school environment, as many of the efforts to address childhood obesity have been school-based. Because public policy is the driving force behind many of the programs being developed, I then analyze the current status of existing and proposed legislation in Pennsylvania. This thesis concludes with a family-focused, school-based prevention program that I have designed based upon my in-depth research into childhood obesity.

2.0 STATEMENT OF THE PROBLEM

In the last decade national attention has increasingly focused on efforts to reduce obesity among our youth. Recent studies and surveys provide clear evidence that children and adolescents are becoming overweight and, more significantly, obese at increasingly younger ages. Statistical evidence demonstrates that obesity has become a true epidemic that needs to be addressed in our country. “Twenty-five percent of the adult population in the United States is obese, or approximately 45 million adults. Almost 15 percent of our children and adolescents are overweight, or approximately 8 million youth” (U.S. Department of Health and Human Services [HHS], 2007a, p. 5). Research by the Centers for Disease Control and Prevention [CDC] (2006) indicates that the burden placed on our society by the early onset of obesity and the resulting chronic diseases will be enormous:

An estimated 61% of overweight young people have at least one additional risk factor for heart disease, such as high cholesterol or high blood pressure. In addition, children who are overweight are at great risk for bone and joint problems, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem. (¶ 1)

HHS (2007b) has stated that type 2 diabetes has increased dramatically in children and adolescents to the point where it is no longer considered an adult disease. The health problems

associated with obesity are severe, and often lead to long-term negative health consequences as children become older. “Sixty percent of overweight children have at least one additional cardiovascular disease risk factor, and 25 percent have two or more. Hospitalization rates for the complications of obesity in children and adolescents have tripled” (HHS, 2007a, p. 5). The increase in health care usage resulting from obesity-related diseases has had a significant economic impact on the health care system in the United States, as evidenced by the alarming results of a study by Finkelstein, Fiebelkorn and Wang (as cited in CDC 2007c), which found that national medical costs attributed to both overweight (BMI 25-29.9) and obesity (BMI greater than 30) accounted for 9.1 percent of total U.S. medical expenditures in 1998, and may have reached as high as \$78.5 billion. Dietz reported (as cited in HHS 2007a) that chronic disease, death and disability accounted for roughly 75 percent of the \$1.3 trillion spent on health care in the United States in the previous year, and noted that the Surgeon General’s Call to Action on Obesity indicated that obesity is costing the nation \$117 billion annually. The rapid increases in obesity among all population groups, and the resulting health burden associated with this disease, make it clear that our nation is facing an obesity epidemic that can no longer be ignored.

2.1 PREVALANCE AMONG CHIDLREN AND ADOLESCENTS

It has become increasingly apparent that attention needs to be focused on the prevalence of obesity in children and adolescents. “Overweight adolescents have a 70% chance of becoming overweight or obese adults” (HHS, 2007b, ¶ 4). In response to these alarming statistics, professionals in the public health and other health-related fields have begun to focus their

attention on strategies for preventing and controlling overweight and obesity in children. Based on the Healthy People 2010 guidelines, the goal of this identified focus area is to promote health, and reduce chronic disease associated with diet and weight. However, comparative data presented in the Healthy People 2010: Midcourse Review by HHS (2006) indicates that:

Between 1988-94 and 1999-2002, the prevalence of overweight and obesity among children and adolescents aged 6 to 19 years (19-3c) increased from 11 percent to 16 percent, moving away from the target of 5 percent. Identical trends were observed among children 6 to 11 years (19-3a) and adolescents aged 12-19 years (19-3b). (p. 19-5)

These negative results clearly indicate that programs developed and interventions implemented to address this problem are not working, thereby reinforcing the urgent need for additional research to develop new ways to deal with this issue. The lack of success in this area is further evidenced by the decision during the Midcourse Review to delete objective 19-15 (increase the proportion of children and adolescents aged 6 to 19 years whose intake of meals and snacks at school contributes to good overall dietary quality) due to the lack of suitable data sources (HHS, 2004). It is evident that ongoing research must include techniques to measure the effectiveness of interventions that are put in place in school environments.

2.2 SOCIAL AND EMOTIONAL PROBLEMS

As awareness of the obesity epidemic continues to grow, researchers have begun to study the emotional consequences of obesity, and the extent to which social and emotional factors

contribute to the prevalence of obesity and overweight. “Social health of children also suffers as a result of obesity. Obese individuals are stigmatized in American society. These children are often the victims of negative stereotyping, discrimination, teasing, and bullying” (Harper, 2006, p.289). Hill and Trowbridge (1998) suggest that obesity may be associated with significant negative psycho-social outcomes that are likely to have long-lasting negative medical and psychological consequences. In support of this observation, a study of privately insured children by Marder & Chang (2006) found that 9.9% of obese children have depression compared to 1.4% for non-obese children, and 10.7% of obese children have other diagnosed neuroses (mental disorders that cause anxiety, obsessive thoughts, and or compulsive acts) compared to 2.0% for non-obese children. Our society also contributes to the negative perceptions of obesity because many people fail to consider or accept obesity as a disease. “Lack of acceptance of obesity as a disease by a large part of the public, healthcare providers, and third-party payers limits the success of some approaches to prevent and decrease overweight and obesity” (HHS, 2004, ¶11). Another problem that children and adolescents face is the proliferation of unsafe weight-loss methods that are popularized by the media within the United States. As a result, unhealthy weight-loss behaviors have become increasingly prevalent among children and adolescents. “A national survey of 8th- and 10th-grade students found that 32% skipped meals, 22% fasted, 7% used diet pills, 5% induced vomiting after meals, and 3% used laxatives to lose weight” (CDC, 1996, p. 4). These alarming statistics demonstrate the importance of changing the message that our young people receive. “The emphasis of society in the United States on thinness should be challenged, and young persons need to develop a healthy body image” (CDC, 1996, p. 4). “One promising approach involves peer-led initiatives...Peer education can directly affect the social environment, can provide positive role models, and can help change social

norms” (Story, Lytle, Birnbaum, & Perry, 2002, p. 121). Because their peers easily influence children and adolescents, this technique may be an effective means of combating childhood obesity.

3.0 TARGET POPULATION

Empirical evidence of the multi-generational nature of the obesity crisis in this country is growing. Jacques (2006) reported on a 22-year study released in 2006 by Harvard University researchers, which found an overall increase in the prevalence of overweight by 59 percent for children under the age of six, and a 200 percent increase in teens aged 12-19. Given the enormity and breadth of the obesity epidemic, the question arises as to where efforts should be focused to most effectively address the problem. Caballero (2004) proposes that, because obesity is a protracted and difficult-to-treat condition, it would make the most sense to focus prevention on the younger generation, where health and nutrition education can shape good dietary practices to avoid excess weight gain throughout their lives. Evidence cited by Dietz (1999) supports this approach, as it has been observed that the severity and age at which obesity is present appear to determine the extent to which obesity will continue into adulthood: “At any age, more severe obesity appears more likely to persist. In addition, obesity present in adolescents is much more likely to persist than obesity in younger children” (Dietz, 1999, p. S7). Thus, it appears that the most effective strategy to combat the obesity epidemic would be to develop prevention measures and interventions that are targeted towards children and adolescents. Caballero (2004) found that behavioral change is an essential component of both prevention and management programs for childhood obesity. Therefore targeting children and

adolescents, who are most receptive and responsive to efforts directed at changing behavior, increases the likelihood that positive results will be achieved. “Many studies have documented variable levels of success in this area, particularly with elementary and middle school children” (Caballero, 2004, p. S93).

When developing prevention and intervention programs for children and adolescents, it is also important to consider the age group being targeted. “Different educational strategies should be used for young persons at different stages of cognitive development. Regardless of the amount and quality of teaching they receive, young elementary school children might not fully understand abstract concepts” (CDC, 1996, p. 18). The CDC recommends that nutrition education for young children should be focused on concrete experiences, while more abstract associations between nutrition and health can be used as children approach middle school. For middle school and high school students, it is recommended that nutrition education focus on helping students assess their own eating behaviors and setting their own goals for improving food selection. Therefore, the design of effective nutrition education programs must include age-appropriate elements if successful outcomes are to be achieved.

3.1 CULTURAL CONSIDERATIONS

Research also suggests that, when developing prevention programs, it is important to take into consideration the target population’s racial, ethnic, and economic backgrounds. A study conducted at Johns Hopkins University (2007) found several population groups to be more affected by obesity than others: “Some minority and low socioeconomic status groups-such as

non-Hispanic black women and children, Mexican-American women and children, low socioeconomic status black men and white women and children, Native Americans and Pacific Islanders-are disproportionately affected” (Johns Hopkins Bloomberg School of Public Health, 2007, ¶ 1). Other research indicates that socio-economic and cultural considerations must be taken into account when formulating plans to address the obesity crisis. “Studies have shown increasing rates of childhood obesity among U. S. ethnic groups with socioeconomic factors playing a significant role in its development. These factors may be influenced by cultural perceptions regarding dietary practices” (Bruss et al., 2005, p. 156). It is imperative that program developers understand the impact of the target group’s culture when communicating nutritional information associated with dietary and eating practices Danielzik, Czeerwinski-Mast, Langanse, Dilba, & Muller (2004) found that there was an inverse relationship between socio-economic status (SES) and overweight: in comparison with children from high SES families, children from low SES families were more frequently overweight. This indicates that an emphasis should be placed on targeting nutritional education programs in communities whose members are predominately from lower socioeconomic backgrounds. Research focused on children by Katz et al. found that “overall, the prevalence of childhood overweight has tripled over the previous 2 decades and the prevalence of overweight among certain ethnic minority groups is even higher” (Katz et al., 2005, p. 2). The Johns Hopkins University study reported that “white children and adolescents had the lowest prevalence of overweight and being at risk of overweight compared with their black and Mexican counterparts” (¶ 4). Statistics developed by HHS (2004) also indicate that rates of obesity have increased more rapidly among African Americans and Mexican Americans than among Caucasians:

The proportion of overweight females rose from 10 to 15 percent, and of overweight males, from 12 to 16 percent. For Mexican American children and adolescents, the proportion overweight in 1999-2000 was 24 percent; for black children and adolescents 22 percent. Less than 5 percent of children and adolescent, male and female, were overweight in 1966-1970. (¶ 4)

Based on these findings, it is evident that the design of prevention and intervention programs must consider the extent to which the influencing factors of race and ethnicity contribute to obesity disparities among children and adolescents. To most effectively address the obesity epidemic, prevention and intervention programs should also be targeted at children from low-income families who are members of minority racial and ethnic groups.

4.0 DEFINITION OF OVERWEIGHT AND OBESE

In order to design and implement any successful prevention program, researchers, school districts, program administrators, parents, and communities need to truly understand the multiple factors that are contributing to the obesity epidemic. The CDC (2007a) has described obesity as the result of an energy imbalance over a long period of time, which may be caused by a combination of multiple factors including individual behaviors, environment, and genetics. Contributing to the multi-faceted nature of this problem is the challenge in identifying children and adolescents who are obese, or at risk of becoming obese. HHS (2007b) identifies doctors and other health care professionals as those best able to determine if a child's or adolescent's weight is healthy. Also, they can help rule out rare medical problems as the cause of unhealthy weight. There are some basic biological contributing factors related to weight gain that must be understood in order to address the obesity problem. "Overweight and obesity result from an energy imbalance. This involves eating too many calories and not getting enough physical activity" (CDC, 2007c, ¶ 2). Simply put, weight gain will result if calories consumed are greater than calories used, and weight loss will only occur when calories consumed are less than calories used. It is important to understand these basic concepts, particularly when designing intervention programs targeted at weight loss.

Efforts to address the issue of obesity require an understanding of how it is defined, and how health care professionals diagnose someone as obese or overweight. One measure commonly used for this purpose is body mass index (BMI), which is a measure of body fat based on height and weight. “BMI ranges for children and teens are defined so that they take into account normal differences in body fat between boys and girls and differences in body fat at various ages” (CDC, 2007a, ¶ 6). This is only one means of assessing the extent to which someone is overweight. The CDC (2007b) also reports that the National Heart, Lung, and Blood Institute guidelines recommend looking at two other predictors: the individual’s waist circumference, and other risk factors the individual has for disease and conditions associated with obesity. “These assessments might include skin fold thickness measurements, evaluations of diet, physical activity, family history, and other appropriate health screenings” (CDC, 2007b, ¶ 4). To effectively work towards solutions to the obesity epidemic, it is important that researchers and program designers be aware of these measures of obesity and overweight.

5.0 CAUSAL FACTORS

When designing a prevention or intervention program, it is important to utilize a socioeconomic model to develop an understanding of the multiple influencing factors contributing to the obesity epidemic. “The Institute of Medicine has recommended the use of a socioeconomic model to help characterize the multiple levels of influences on human-environment interaction into individual, interpersonal, community, and policy levels” (Campbell & Quintiliani, 2006, p. 783). Implementing this approach will help researchers gain a holistic understanding of the causal factors involved, which in turn will guide the design of an effective intervention program to induce changes in behavior.

5.1 BIOLOGICAL, GENETIC, AND DIETARY BEHAVIORS

Childhood obesity is a complex disease resulting from genetic, metabolic, and behavioral factors. “Obesity results from an imbalance between intake and expenditure, and there are strong genetic influences of these components of energy balance” (Hill & Trowbridge, 1998, p. 571). Research is currently being conducted on specific gene variants that directly contribute to obesity. “A defect in a gene called *INSIG2* was found to be associated with obesity. This obesity-predisposing gene is present in around 10 percent of the population” (Jacques, 2006, ¶ 19).

Researchers have had difficulty determining the relative roles played by genetics and environment, with some results indicating that genetic factors are predominant. Using studies that found genetic factors may account for 25-90% of differences in body fat among individuals, “Vogler et al. proposed that most of the familial risk is likely to be explained by genetic factors, whereas only a minor effect is due to shared environment” (Danielzik et al., 2004, p. 1498). However, the wide range of the results reported indicates that, while genetic influences may ultimately be found to be more significant than environmental, both likely play an important role.

In recent years, the quality of dietary behaviors among children and adolescents has deteriorated relative to previous decades. Brown (as cited in Petrillo and Meyers, 2002) found that the overwhelming majority of young people in the United States do not adhere to the dietary guidelines of the Food Guide Pyramid. “Research has shown that only 2 percent of a teenager’s diet corresponds with the Food Guide Pyramid and approximately 16 percent do not eat the number of servings recommended for any of the food groups” Petrillo & Meyers 2002, p. 293). It has been reported by HHS (2004) that the largest gap among children and adolescents is related to the amount of fruits and vegetables consumed:

The age-adjusted average number of daily servings of fruit consumed by people 2 years of age and older changed little, going from 1.6 in 1994-1996 to 1.5 in 1999-2000. Two to four servings are recommended (objective 19-5). Vegetable intake also showed little change: an average of 3.4 daily servings in 1994-1996 compared with 3.3 in 1999-2000. Three to five servings are recommended, with at least one-third being dark green or orange vegetables (objective 19-6). (¶ 5)

In order to effectively combat childhood obesity, it will be necessary to address the inadequate amounts of fruits and vegetables children are consuming. Other poor dietary behaviors related to

intake of fats were reported by Petrillo & Meyers (2002): more than 84 percent of children and adolescents consume too much total fat on a daily basis and more than 90 percent eat too much saturated fat. They also found that, on average, young people get 33-34 percent of their calories from total fat, and 12-13 percent of their calories from saturated fat. Poor dietary habits encompass consumption of beverages, which has also been a concern. “During the past 25 years, consumption of milk, the largest source of calcium, decreased 36 percent among adolescent females. At the same time, average daily soft drink consumption almost doubled among adolescent girls, increasing from 6 to 11 ounces” (CDC, n.d., ¶ 26). There are concerns regarding the high levels of sugar consumption by children and adolescents, because consuming excess calories from foods and drinks high in sugars will contribute to weight gain. Therefore, it is extremely important to understand the current dietary intake behaviors of children and adolescents when developing programs to address the obesity epidemic.

5.2 ENVIRONMENTAL FACTORS

Environment plays a key role in the obesity epidemic in the United States, encompassing a number of contributing factors. “Obesity is a complex multifactorial trait. Environmental factors favouring overweight and obesity include a high fat and energy intake, a low level of habitual physical activity as well as frequent inactive behaviours” (Danielzik et al., 2004, p. 1495). The role played by physical activity is important to consider because, as previously noted, children and adolescents have high rates of fat and caloric intake. “Programs are encouraged to use strategies that address environmental and policy approaches to promoting and

supporting physical activity, rather than strategies only directly promoting individual behavior change” (HHS, 2007a, p. 23). “Data from 2003 collected by the CDC reported that 25 percent of U.S. children engage in no free-time physical activity” (Jacques, 2006, ¶ 13). It is frequently cited that children are not engaging in physical activity because, for a number of reasons, it is not accessible to them. Friedrich (2007) observed that fighting obesity in low-income neighborhoods is not as simple as trading potato chips for carrots or shutting off the television and heading outdoors, because healthy food choices are scarce and playing outside may not be safe. Harper (2006) found that parents’ perceived level of safety within their neighborhood may impact their decision to allow their children to play outdoors. Researchers have found that the lack of access to parks and recreational facilities in communities is correlated with high obesity rates among community members. “The design of neighborhoods is an important determinant in the amount of physical activity children receive. The presence of sidewalks, bicycle paths, and parks is conducive to physical activity” (Harper, 2006, p.290). Experts have begun to look at the difference between urban communities and suburban areas, and have found multiple factors affecting obesity rates in both. HHS (n.d.) reports that urban areas suffer from neighborhood crime, a lack of space for outdoor recreation where children will have a protected place to play, and busy traffic that can keep people from walking or biking to work as means of daily exercise. HHS also found that the evolution of “sprawl” in suburban areas and the lack of sidewalks can prevent those residents from walking or biking, which contributes to an increased dependence on vehicle use. Krisberg (2006) reported the results of a study that corroborates these observations:

[A] Department of Transportation National Household Travel Survey found that, among Americans, the total number of walking trips has declined 40 percent since 1977, and that children ride in cars during 70 percent of all trips they take.

Today, fewer than 15 percent of children walk or ride their bikes to school. (p. 26)

It is evident that the role environmental factors play in determining accessibility of physical activity contributes to the obesity problem.

Other environmental influences impacting the obesity crisis in the United States are related to behavior patterns associated with food consumption. Due to the fast-paced society in which Americans live today, increasing numbers of people are consuming many of their meals outside of the home. HHS (2007a) reported that:

In 1992, 38 percent of the food dollar was spent on foods eaten away from home, an increase from about 20 percent in the 1970s. Likewise the percentage of meals and snacks eaten away from home increased from 16 percent in 1977-78 to 27 percent in 1995. (p.15)

Studies indicate that foods consumed outside the home are more likely to lead to obesity and obesity-related diseases. Business and industry have also contributed to changes in food consumption behaviors. “These days, food and drink are available in most venues of everyday life.... A typical American supermarket carries 45,000 items and consumer portions served by restaurants and fast-food establishments are often double the size of current recommended USDA serving size” (Savage, Fisher, & Birch, 2007, p. 23). HHS (2007a) observed that, because the trend towards larger portion sizes for restaurants and processed foods has occurred concurrently with increases in the prevalence of obesity, the larger portion sizes could be viewed as equivalent to increased calorie consumption, which would result in weight gain. Because it is a highly profitable component of their operations, retail food businesses continue to offer energy-dense foods in increasingly larger portions. As a result, “adolescents have unlimited access to

fast foods that are...extensively promoted. Unfortunately, these foods are high in calories, contain high levels of saturated fat, sodium, and sugar, are low in fiber and calcium, and ultimately low in nutritional value” (Petrillo & Meyers, 2002, p. 293). One of the primary strategies used by fast food restaurants is extensive use of advertising that is targeted to children and adolescents. “The media have a powerful influence and have the capacity to persuade children to make poor food choices. Even brief exposure to televised food commercials can influence preschool children’s food preferences” (Society for Nutrition Education [SNE], 2003b, p. 58). As noted by Conklin and Parks (2005), food marketers realize that targeting advertisements to children will influence the types of foods families purchase. They also found that the message is often intentionally distorted: “Food marketers claim that in the food industry: ‘there are no good or bad foods’ and that ‘increased physical activity is the most important factor in addressing obesity’” (Conklin & Parks, 2005, p. 55). Although it is true that physical activity is important, linking it to the false statement that there are no “bad foods” is extremely misleading, and is likely to cause children to make poor food choices. Advertisers are making increasing use of internet and mobile phone advertising, which is of particular concern because of their appeal to young people. Conklin and Parks (2005) estimate that nearly one-half the world’s teenagers have access to the internet, and 20% have mobile phones. Given that large portions of the world’s population have little or no access to these technologies, this would indicate that percentages within the United States are considerably higher.

Because of the multitude of factors involved, the impact of their environment on children’s obesity-related behaviors is of particular concern. Working at the community level may be an effective way to address these issues. “Local communities must be mobilized to begin taking the logical steps of making their environments more conducive to activity and

educating teachers, parents, restaurants owners, and other stakeholder about the risks causes and prevention of obesity” (Forrest & Riley, 2004, p. 159).

5.3 FAMILY INFLUENCES

The role of the family in contributing to the obesity epidemic has been very difficult for researchers to evaluate because of the interrelationships among influencing factors. “In the most comprehensive study of the natural history of obesity in children and adolescents, parental obesity was the greatest risk factor for the persistence of obesity in children aged 1-3 years, regardless of weight status of the child” (Dietz, 1999, p. S7). These findings suggest that familial or genetic factors may have some influence on the persistence of obesity from an early age. However, it has also been observed that, as a child ages, individual factors may become the predominant contributors to long-term obesity. “As children grow older, the effect of parental obesity on the likelihood that obesity will persist decreases, whereas the effects of obesity present in the child increase” (Dietz, 1999, p. S7). Therefore, it appears that familial and individual factors are both important determinants of a child’s obesity and long-term weight outcomes. Feeding practices is another documented family influence that has an impact on childhood obesity. “It has been shown that mothers who were most controlling of their 3- to 5-year-old’s food intake had children who showed higher rates of eating, less ability to self-regulate energy intake, and increased adiposity” (HHS, 2007a, p. 19). Evidence indicates that parenting styles and feeding practices can have a significant impact on a child’s eating behaviors. Wardle and Carnell (2006) identified three feeding styles used as deliberate strategies by parents

to influence the type or amount of food their child eats: “(i) pressuring - usually to eat more healthy foods but sometimes just more food overall, particularly at mealtimes; (ii) restriction - usually of access to ‘unhealthy’ foods, particularly energy-dense snacks and (iii) instrumental feeding - use of ‘food treats’ as rewards” (Wardle & Carnell, 2006, p. 5). The decision-making process that leads parents to control their child’s eating habits in a particular way is an area for further research. Another important factor that researchers will need to consider is the role of cultural influences on parenting styles. “A caregiver’s perception of appropriate child feeding practice is influenced by a variety of sources, including culture, family characteristics, social experience, and environmental communicative messages” (Bruss et al., 2005, p. 157). Bruss et al. also report that some studies have found that ethnic identity, ethnic dietary habits, consumption of ethnic and non-ethnic foods, and the cross-cultural significance of food all impact health-related behaviors.

A significant familial influence on childhood obesity is the failure of parents to perceive that their child is overweight or at-risk of becoming obese. Savage, Fisher and Birch (2007) report that:

Data from the Third National Health and Nutrition Examinations survey (1988-1994) indicate that nearly one third of mothers with overweight children do not perceive their children as being overweight. Among low-income populations, seventy to eighty percent of mothers perceive their overweight child to be of normal weight or even underweight. (p. 30)

Parents who are unable to acknowledge that their child is overweight or at-risk for becoming obese are most likely allowing cultural, socioeconomic, and psychological factors to influence their perceptions of their child’s weight and health status. Evidence suggests that parents are the

key responsible agents for modeling healthy behaviors. “The home and family environment are major factors affecting the child’s knowledge, beliefs, attitudes and practice regarding food and eating habits” (Golan & Weizman, 2001, p. 103). Thus, it is extremely important to involve the entire family when treating obesity in children. “It has been demonstrated that the long-term effectiveness of a weight control program is significantly improved when the intervention is directed at the parents as well as the child, rather than aimed at the child alone” (Moran, 1999, p. 867). In summary, research indicates that there are a number of familial influences that contributed to a child’s risk factors for obesity. These factors must be considered when developing prevention and intervention programs to address the childhood obesity epidemic.

5.4 MEDIA INFLUENCES

Media advertising is another societal factor contributing to the rise in childhood obesity. Extensive research of this issue has been conducted, perhaps due in part to the public perception that the media has a strong influence on children’s behavior. Harper (2006) has observed that the media is a significant stakeholder in the obesity epidemic, with billions of dollars in food advertising spent on television alone. “The amount of time children spend watching television daily coupled with the amount of corporate advertising money spent to reach these children makes television a key player in either the promotion of obesity or its prevention and cure” (Harper, 2006, p. 290). The CDC (1996) has documented numerous research projects addressing this issue:

Studies have indicated that, compared with those who watch little television, children and adolescents who watch more television are more likely to have unhealthy eating habits and unhealthy conceptions about food, ask their parents to buy foods advertised on television, and eat more fat. (p. 10)

More recently, Katz et al. (2005) found that internet use and playing video games appear to be significant factors contributing to a decrease in physical activity, which in turn is a significant factor in the increase in childhood overweight and obesity. Conklin and Parks (2005) have observed that, because members of this generation have the ability and tools necessary to readily make informed decisions, they are empowered more than any previous generation. However, they are also easily influenced by what interests them, and advertising companies know how to tap into their needs and desires.

6.0 SCHOOLS

As increasing national attention has been focused on the obesity epidemic, program developers and policy makers have focused their attention on the school environment for implementation of prevention and intervention strategies. “A substantial proportion of daily calories are consumed in these settings, and...sites frequently have existing facilities that can support regular physical activity among students and employees, potentially reducing obesity and overweight in addition to providing other benefits” (Katz et al., 2005, p. 3). Schools have become a favored location to intervene because of the continuous and intensive interaction school personnel have with children and adolescents. Katz et al. (2005) also note that schools have the ability to capitalize on existing resources and tools to develop student knowledge, attitudes, and skills that they will need to live healthy lifestyles. SNE (2003b) supports the broad use of school-based programs to address the obesity epidemic as well: “Schools can play a key role in reversing this trend through school nutrition policies that ensure coordination of comprehensive nutrition education programs, child nutrition programs, a healthy school environment and community partners” (SNE, 2003b, p. 58). The CDC (1996) has been an advocate of school-based programs for many years. One intriguing element of program design recommended by the CDC is turning the normally negative attribute of peer pressure, which is very strong in young people, into a positive factor:

Schools can teach students how to resist social pressures. Eating is a socially learned behavior that is influenced by social pressures. School-based programs can directly address peer pressure that discourages healthy eating and harness the power of peer pressures to reinforce health eating habits. (p. 8)

A study conducted by Foster et al. (2008) found that a multi-component school-based intervention can be effective in preventing the development of overweight among children in grades 4 through 6 in urban public schools. Given the magnitude of the role that schools play in student's lives, it is apparent that they provide an optimal setting to reach children and adolescents who are overweight or obese.

6.1 SCHOOL LUNCH/BREAKFAST PROGRAMS

The primary contributors influencing healthy food choices in schools are the National School Breakfast and Lunch Programs. “The National School Lunch Program was established in 1946 due to the high rates of poverty and malnutrition among school children. ...The foods purchased helped meet basic physical needs among children in areas where the food supply was scarce” (Harris, 2002, p. 310). These programs were originally designed to meet the minimum nutritional requirements of children in need; only recently have they begun focusing on meeting dietary guidelines. A significant issue concerning school lunches is their attractiveness to students. Researchers have found that students' views of school lunches are mixed. “While some report that there are a variety of choices available, others feel that the food is poor quality, does not taste good, and is not fresh. They also report portions are too small” (Children's

Alliance, 2004, p. 5). Unfortunately, the cost of nutritious lunches has become a barrier schools face in trying to make these free and reduced-price lunches more appealing. As noted by Bushweller (1993):

But these days, as schools budgets continue to feel the pinch, food service officials still must satisfy kids' taste buds - and achieve nutrition goals. Since kids' preferences don't run to low-fat foods, simply including low-fat items in an otherwise traditional cafeteria lunch isn't the answer. (p. 33)

As children mature, school lunches become less desirable and, as more options become available, students tend to be attracted to other food choices. Some schools have moved to prepackaged foods which have become popular among students. However, Gavin (2004) found that they are expensive and often have less nutritional value. Another issue is the social stigma associated with free and reduced-cost lunches. "Students in all groups report that there are privacy problems in terms of their participation in the free and reduced program, with several ways in which other students find out which students are, or are not, in the program" (Children's Alliance, 2004, p. 7). In addition, CDC (n.d.) found that nutrition advocates are concerned that increases in a la carte sales may result in stigmatizing participants in meal programs, if it is perceived that the programs are targeted to poor children rather than seen as a nutrition program for all children. Another factor reducing the effectiveness of school lunch programs, while also contributing to the rise in childhood obesity, is the increase in consumption of fast foods. Harris (2002) found that there is a direct threat to the viability of the School Lunch Program and the consumption of these foods. This threat results from school policies that do not provide guidelines on what foods can be brought from home, and policies that allow students to leave school for lunch (Harris). Because there are a variety of factors that impact the success of school

meal programs, schools need to work with district families to overcome these challenges. As one group of researchers recommend, "...students and parents can become involved in creating, modifying, and marketing school menus. The best lunches in the country will not improve the nutritional intake of children if the children do not buy and eat those lunches" (James, Rienzo, & Frazee, 1996, p.133). Thus it is evident that this quandary creates an important impediment to policy change, thereby making this a true multi-agent dilemma.

6.2 SCHOOL LUNCH ENVIRONMENT

Along with making changes to the type of foods that are available, policy makers also need to consider the environment in which students eat. A related issue that needs to be addressed is the time factor. Many children feel they do not have enough time to sit down and eat a well-balanced, nutritious lunch. As described by Fratt (2001):

The lunch hour, at a mere 15 to 20 minutes, may not provide students enough time to make it through a cafeteria line and eat a balanced meal. Or a student rushing for lunchtime tutoring or band practice may welcome the chance to grab a quick meal from a vending machine. (p. 54)

Passmore and Harris (2005) identified several environmental factors that may contribute to poor nutrition behaviors in schools, including the quality of the food provided, the school dining area (sufficient tables and chairs for pupils to eat their food) and the price of the food. Research has shown that the school environment will affect a child's food consumption behavior. "The availability of high-fat foods in the children's environment, the positive social environment

associated with some non-nutritious foods, and children's predisposition to like these foods are contributing to the increased incidence of childhood obesity" (SNE, 2003b, p. 58). Cullen and Zakeri (2004) found that there was a decline in fruit, vegetable, and milk consumption, and a corresponding increase in high-fat food and soda consumption, as children transitioned from elementary school to middle school. This research provided evidence that the freedom of choice is a significant influencing factor in the development of poor eating behaviors. Passmore and Harris (2005) evaluated freedom of choice from another direction by demonstrating that food selection can be altered in schools when students are given more control over the foods provided by soliciting their input as to their personal preferences. Brannen and Storey (1998) studied the types of meals students were choosing as they transitioned from elementary school to middle school, where they were offered more choices such as cash snack bars and a la carte selection. They found that "when children are introduced to increased dietary responsibility at the start of secondary school, more are attracted to the freedom of choice after the more rigorously controlled world of primary school" (Brannen & Storey, 1998, p. 80). The result of this newfound freedom is typically a reduction in consumption of well-balanced school lunches as students try other, less nutritious alternatives. However, research also provides evidence that, along with freedom of choice, the environment in which the choices are available plays a large role in determining dietary intake. Cullen and Zakeri (2004) found in their research that students in schools that served more fruits and vegetables ate more fruits and vegetables. Although freedom of choice in food selection has generally contributed to poor eating behaviors, research suggests that students can be influenced to make better food choices by offering more appealing and nutritional alternatives in attractive settings.

6.3 VENDING MACHINES, A LA CARTE, SCHOOL STORES

A major problem with the school environment is that many food choices are available outside of the school meal programs. Typically, these alternatives include snack bars, vending machines, school stores, classroom parties and fundraisers. Research by the CDC found that “43.0% of elementary, 73.9% of middle/junior high, and 98.2% of senior high schools have either a vending machine or a school store, canteen, or snack bar where students can purchase food or beverages” (CDC, 2000, ¶ 3). It is evident that majority of schools are contributing to the obesity problem by making these choices available to their students. “A USDA report to Congress concluded that competitive foods have lower nutritional quality than school meals and that these foods may contribute to overconsumption of food energy” (American Dietetic Association, 2005, p. 124). Lisa Fratt (2001) has concluded that competitive foods are influencing obesity because they are not part of the USDA’s meals programs, and therefore are not subject to the same nutritional regulations as reimbursable school meals. The lack of regulation leads to offerings that are more attractive to children (candy, chips, etc.) but also less nutritious, which sends a poor signal to young people. “Children receive a mixed message when the value of healthful food choices is taught in the classroom and students then encounter school vending machines and other venues with...snack foods and beverages that are not based on meeting nutrition standards” (American Dietetic Association, 2005, p. 125). Gavin (2004) notes that, although school lunch programs are beginning to meet dietary intake standards and are serving more attractive meals, in most cafeterias students can still choose unhealthy foods that are available a la carte or in vending machines. Having attractive, unhealthy foods available to students negatively impacts their willingness to choose healthier foods. “When schools offer competitive foods, they

inadvertently undermine the initiative of the USDA's National School Lunch Program, which is to educate children about good eating habits" (Fratt, 2001, p. 54). Research indicates that a la carte offerings have a negative effect on school lunch programs. "Studies have shown that, as income from a la carte sales increases, student participation in meal programs decreases" (CDC, n.d., p. 8). Although some schools have taken steps to improve their nutritional environment by having vending machines removed, they are still available in most schools. Marr (2004) explains that federal regulations prohibit the operation of soft drink machines in school cafeterias and food service areas during breakfast and lunch. However, the soft drink industry has responded by equipping their machines with timers and/or moving them to different locations in the school building. School Boards have consistently battled over the issue of continuing to allow vending machines in their schools. "Often cash-strapped school districts welcome competitive foods sales because revenue can be returned to the school and help support academic and enrichment programs" (Fratt, 2001, p. 54). A research study reported by the CDC (2000) found that:

49% of districts have a contract that gives a company rights to sell soft drinks at schools in the district. Among these districts, 79.2 % receive a specified percentage of the soft-drink sales receipts, 62.5% receive incentives tied to sales, 35.3% allow the soft-drink companies to place advertisements in school buildings, and 43.0% allow them to place advertisements on school grounds. (¶ 8)

The overriding need to keep school taxes under control, when combined with financial incentives offered by vending machine suppliers, sometimes results in decisions that are not nutritionally in the best interests of the students.

6.4 PHYSICAL EDUCATION IN SCHOOLS

The other major factor associated with the increase in childhood obesity is the reduction in physical education activity in schools. “In 2001, only 32% of high school students participated in daily physical education classes, compared with 42% of students in 1991” (Fisher et al., 1999, p. 2). In response to the lack of physical education classes offered in schools, policy makers established guidelines as part of Healthy People 2010 that provide for increases in physical education. Fisher et al. (1999) summarize the principal Healthy People 2010 objectives that relate to increasing physical activity among children and adolescents:

Objective 22-08: Increase the proportion of public and private schools that require daily physical education for all students.

Objective 22-09: Increase the proportion of adolescents who participate in daily school physical education.

Objective 22-10: Increase the proportion of adolescents who spend at least 50% of school physical education class time being physically active.

Objective 22-12: Increase the proportion of public and private schools that provide access to their physical activity space and facilities for all persons outside of normal school hours. (p. 9-3)

Although these objectives were mandated as part of the Health People 2010 initiative, subsequent research studies have found that “current instructional practices in physical education do not meet the standards identified by national health objectives” (SNE, 2003b, p. 58). A significant factor contributing to the failure of school administrators to enforce physical education activity is a lack of financial resources. “Schools state that the reduction of physical

education programs is due to budget constraints and the lack of program evaluation by physical education instructors” (Harper, 2006, p. 290). Harper also explains that some schools blame competing academic standards as a reason for eliminating physical education, while others claim that physical education is of little value compared to general education classes. Others have observed that “the No Child Left Behind Act of 2001 may be a culprit in the diminishing P.E. curriculum, unintentionally sapping schools of time and resources for exercise as educators focus more and more on test scores and rigorous academic coursework” (Trickey, 2006, ¶ 11). Budd and Volpe (2006) found that physical activity is also impacted by such school environment factors as increased busing due to poor sidewalks, unsafe playing areas, and the need to stay inside in after-school programs while parents work. To effectively combat the obesity epidemic, school districts must enforce the national health objectives in their schools, and implement physical education programs that have a strong physical activity component.

6.5 REWARDS AND TEACHER MODELING

Efforts to improve the nutritional quality of meals address only one aspect of the exposures to food that exist in the school environment. “Other nutrition integrity aspects of the school environments included the use of food as a reward for children, foods provided at school parties, food used for fundraisers, and food choices in the after-school feedings and other school events” (American Dietetic Association, 2005, p. 127). Food as a reward is often described as giving a child an incentive, such as candy, pizza, or other poor nutritious foods, to motivate them to complete an assigned task. The American Dietetic Association (2005) has observed that using

food as a reward undermines nutrition education lessons, encourages over consumption of foods high in added sugar and fat, and teaches the use of food to achieve a goal rather than as an intrinsic motivator. Increasing awareness of this issue has resulted in the establishment of guidelines to reduce this type of behavior. In Pennsylvania, the Department of Education has mandated that: “Teachers will reinforce positive nutrition messages in the classroom. Food will not be used as a reward or punishment. Foods provided at classroom parties will meet the school districts nutrition guidelines as stated in their local wellness policies” (Pennsylvania Department of Education, 2007a, ¶ 24). Another often-overlooked problem that schools face is the failure of their teaching staff and administrative personnel to model positive nutritional behavior. In order to motivate children to make changes “parents/guardians as well as the schools must teach and model sound dietary practices, principles, policies, and programs” (Pertrillo & Meyers, 2002, p. 296). Okla (2007) found that, when teachers eat with their students and use the time as a lesson, it provides an opportunity to effectively teach children about making healthy choices. “After appropriate training, teachers can use their instructional skills and food service personnel can contribute their expertise to nutrition education programs” (CDC, 1996, p. 8). The more knowledgeable teachers and school personnel become regarding healthy lifestyle choices, the more success school districts will have at implementing wellness programs within the school environment. Teachers in particular are a key stakeholder in the implementation of new wellness programs. The Center for Health and Health Care in Schools (2006) notes that teachers are responsible for selecting teaching instruction in specific areas such as health. Thus, teachers greatly influence the effectiveness of nutrition education efforts, because they determine the means by which health and wellness elements are incorporated into their general educational curriculum. “Teachers will identify strategies for incorporating age-appropriate nutrition

education into a variety of subject areas (e.g., math, language arts, foreign languages, social studies, etc.)” (Pennsylvania Department of Education, 2007a, ¶ 4). Based on the magnitude of the role that teachers play, it is evident that they are a crucial element in the development of strategies to combat childhood obesity within the school environment. Unfortunately, there is little evidence to date demonstrating that the Department of Education or individual school districts are monitoring and reporting teacher involvement.

6.6 SOCIAL AND FAMILY INFLUENCES IN SCHOOLS

Other challenges schools face when attempting to address childhood obesity fall under the heading of social and familial factors. One of the major problems schools face is that many students come from homes with poor eating habits, and their peers often reinforce these habits. One study found that “more than 80% of participants identified inactivity, poor eating behavior, lack of parental control in what children eat, and eating too much as the main causes of childhood obesity” (Murphy & Polivka, 2007, p. 40). HHS [2007a] has found that family involvement has been shown to increase student knowledge and positive attitudes toward healthy habits. Unfortunately, little progress has been made in this area. “Numerous school interventions add a parent component; however, programs frequently report low success of getting parents meaningfully involved” (CDC, 1996, p. 19). Schools usually struggle to increase participation by parents, but that effort must not be abandoned, because parent and community involvement is a key element of effective intervention strategies. However, parental involvement can have a downside as well, as they may have other issues that can have a negative

impact. “Another barrier in some districts were parents and students who resisted changes to the school’s food and drink offerings, wanting to protect students’ ‘free will’ in choosing what they eat, even if it is unhealthy” (Greves & Rivara, 2006, Discussion Section, ¶ 6).

A related issue that schools face is the sensitivity factor associated with overweight and obesity. “The stigma attached to overweight makes the assessment of weight among children a difficult concern for school officials and parents and raises ethical concerns regarding the potential stigmatization of children” (Katz et al., 2005, p. 5). This issue is one of the reasons some school officials have failed to implement school nutrition programs, although this attitude is slowly changing. One study found that, “while there has not been a significant increase in perception that the school community as a whole is concerned about childhood obesity, school staff members are reported as markedly more interested in the topic than two years previously” (Center for Health and Health Care in Schools, 2006, ¶ 8). Clearly, if there is a lack of concern regarding this issue by those in the best position to do something about it, then school officials charged with implementing nutrition and wellness programs will find it difficult to achieve their objectives.

7.0 POLICY

Policy in the United States has primarily addressed childhood obesity by focusing on environmental factors, such as regulation of marketing that promotes low nutrient food consumption and inhibits physical activity. The National Conference of State Legislatures (2006) has indicated that legislators are currently considering a variety of policy approaches to facilitate opportunities for a healthier diet and more exercise during childhood. Based on research recommendations and the ability to effectively impose regulations, policy efforts to date have generally been directed at the school environment. “Research shows that well-designed, well-implemented school programs can effectively promote physical activity and healthy eating” (CDC, 2008, ¶ 7). Currently, legislation continues to be targeted at prevention within the school environment. Although results vary widely, progress is being made, particularly in states such as Pennsylvania that are aggressively pursuing this agenda.

7.1 LEGISLATION OF 2004

In 2004, acting on legislation proposed by the Bush administration, the 108th Congress passed into law the Child Nutrition and WIC Reauthorization Act of 2004. One of the objectives of this legislation was to address the issues of childhood obesity and increase physical activity through

changes in the school environment. This law required that, no later than the first day of the school year beginning after June 30, 2006, each local education agency participating in a program authorized by the National School Lunch Act or Child Nutrition Act of 1966 must establish a local school wellness policy for schools under the local educational agency (Public Law 108-265, 2004). Boehner (2004) explains that the Child Nutrition and WIC Reauthorization Act was created to strengthen nutritional service programs, promote healthy choices among children, and address growing concerns that the federal school lunch program did not do enough to ensure free and reduced-price lunch benefits went to children who qualified. Schools have historically been the focal point when implementing wellness policies because of the substantial proportion of daily calories that are consumed during school hours. The school environment is the least costly and most effective way to reach a significant proportion of young people. “School programs can capitalize on existing (although often constrained) resources and tools to develop student knowledge, attitudes, and skills essential for healthy lifestyles” (Katz et al., 2005, p. 2). While the school environment can be an effective intervention location because of these resources, policy makers must address the need to involve not only specialists, but also all relevant members of society. The American Dietetic Association (2005) has developed the following position statement:

This wellness policy requirement for school districts provides an immediate and continuing opportunity for dietetic professional at the federal, state, and local levels, *along with industry, media, researchers, parents, and families*, [italics added] to become involved in assisting school districts in addressing healthful eating and physical activity through health-promoting changes in the school environment. (p. 124)

In the United States, authority for public health policy often lies at the state level through legislative actions by state governments. “Within the past few years, many states have introduced legislation (formal written codes such as bills and resolutions) that focuses on obesity prevention in youth, typically through increasing physical activity and improving nutrition within the school and community environment” (Boehmer, Brownson, Haire-Joshu, & Dreisinger, 2007, ¶ 7). Robinson, Lear and Eichner (2006) found that in the area of health, all but six states require health education, and 70 percent of them mandate that the curriculum include information on nutrition and physical activity. The development of any new policy requires that numerous influencing factors be considered, and that external resources be consulted and involved in the process. Also, before an effective policy can be put in place, it will be necessary to focus on identifying prevention programs and interventions that can be successfully implemented in the school environment.

7.2 IMPACT OF POLICY CHANGES

In response to increased public awareness and concerns, policy makers have been very active at both the federal and state level in implementing mandates that address childhood obesity. A survey conducted by the Center for Health and Health Care in Schools (2006) found evidence of both significant and minimal change a few years after the passage of the Child Nutrition and WIC Reauthorization Act. The survey results included the following statistics:

The number of respondents reporting that school efforts to improve the nutritional quality of food at school increased from 38% in 2003/2004 to 49% in 2005/2006.

Fourteen percent reported their schools as taking actions to increase PE compared to 11% two years earlier and 10% reported their schools as increasing recess compared to 7% two years earlier. (¶ 2)

The survey also found “There also appears to be an increase in the importance of keeping children healthy by providing more nutritional meals and snacks” (Center for Health and Health Care in Schools, 2006, ¶ 6). Evidence suggests that there has been some small success since the Child Nutrition and WIC Reauthorization Act was passed in 2004. However, the lack of significant progress has spurred research efforts to determine the underlying causes. Vecchiarelli, Takayanagi and Neumann (2006) studied the effects of policies banning beverages and unhealthy snacks in schools, and found that the Healthy Beverage Resolution and Obesity Prevention Motion had an impact on the beverages and snacks students consumed at school, but few indicated an impact on what they consumed at home/outside of school. This suggests that policy changes within the school environment may be improving students’ dietary behaviors while they are in school, but are having little impact outside of the school environment. Thus it appears that, by not involving parents in the process, these programs are failing to take a systematic approach to the problem. Hoelscher et al. (2004) found that vague policy requirements and loose interpretations of health education curricula standards by school administrators and teachers adversely impacted the effectiveness of the programs. They noted that, in order for policy changes to be effective, everyone involved in the process needs to fully understand the requirements of the law and how it is to be implemented.

7.3 LEGISLATION PROGRESS

The importance of physical education and physical activity has been reaffirmed by the objectives outlined in the Healthy People 2010 program and the Child Nutrition and WIC Reauthorization Act. Lee, Burgeson, Fulton and Spain (2007) report that, in response to the legislative initiatives and to help support the quality of physical education, the National Association for Sports and Physical Education (NASPE) published a second edition of the National Standards for Physical Education in conjunction with the issuance of other key documents on the quality of physical education. In response to the dissemination of these policies, more than two-thirds of all states and more than three-fourths of all school districts have adopted goals and objectives that specifically address student outcomes from the National Standards for Physical Education. (Lee et al., 2007). The CDC conducted a study that evaluated the characteristics of school physical education policies to determine their positive and negative outcomes. Due to the lack of physical education requirements in schools, the Child Nutrition and WIC Reauthorization Act and Healthy People 2010 have established guidelines for schools to enforce mandatory physical education. Lee et al. (2007) reported that progress has been made in implementing the guidelines, with 78.3% of schools nationwide reported as requiring students to take some physical education. However, implementation of the guidelines was found to vary among grade levels. “Specifically, in 69.3% of elementary schools, 83.9% of middle schools, and 95.2% of high schools, students had to take physical education as a requirement for graduation or promotion to the next grade or school level” (Lee et al., 2007, p. 449). The results of this study indicate that mandating physical education has had some success, especially in middle and high schools. However, consideration must be given to intervening at the elementary level to increase

compliance with the mandate. Although the study by Lee et al. (2007) found that a large percentage of schools have developed or incorporated some form of policy stating that physical education will be included in the curriculum, the percentage of schools fully implementing those policies was very small:

Few schools provided daily physical education or its equivalent for students in all grades in the school for the entire school year. Specifically, 3.8% of all elementary schools, 7.9% of all middle schools, and 2.1% of all high schools provided daily physical education or its equivalent for the entire school year for students in all grades in the schools. (p. 449)

It appears that establishing policies and guidelines for school districts to follow is only the first step in making changes to increase physical activity in schools. The next, and more important, step is to focus on ways to ensure that schools actually enforce their established physical education policies and guidelines.

7.4 PENNSYLVANIA SCHOOL GUIDELINES AND PROGRAMS

The Child Nutrition and WIC Reauthorization Act of 2004 contains provisions that impact school nutrition programs. The Act mandated that schools participating in the national school lunch or breakfast program must develop and implement some kind of wellness policy by June 1, 2006. The Pennsylvania Department of Education (2007b) has interpreted the federal legislation by developing guidelines stating that local wellness policies must:

- Include goals for physical activity, nutrition education and other school-based activities that are designed to promote student wellness.
- Include nutrition guidelines for all foods available on the school grounds during the school day with the objectives of promoting student health and reducing childhood obesity.
- Provide assurance that any guidelines established for reimbursable meals at the local level will not be less restrictive than current federal regulations for meals served through the School Nutrition programs.
- Establish a plan for measuring the implementation of the wellness policy.
- Designate one or more persons at the LEA for each school who is responsible for the operational responsibility and ensuring the school meets the policy.
- Involve parents, students, and representatives of the school food authority, the school board, school administrators, and the public in the development of the school wellness policy. (§ 1)

Since the enactment of the Child Nutrition and WIC Reauthorization Act, Pennsylvania has taken a very proactive approach in establishing guidelines that interpret the law and make it less challenging for school districts to comply with its requirements.

7.5 STATE LEGISLATION IN PENNSYLVANIA

The Child Nutrition and WIC Reauthorization Act set the stage for states to focus on their childhood obesity rates, and begin to consider implementing their own initiatives. Pennsylvania

is one of the states that have been very active in proposing legislation related to school nutrition and obesity. In 2006, Pennsylvania enacted PA HB185 (Act 114) which includes the following provisions as summarized by the National Conference of State Legislatures (2007):

- Provides for competitive food or beverage contracts and for nutritional guidelines for food and beverage sales in schools.
- Provides for certain health services and for advisory health councils.
- Provides for local wellness policies and directs the department of education to establish a clearinghouse of wellness policies and information, for an interagency coordinating council for child health and nutrition, for other duties of the Department of Education and for physical education.

This recent legislation supports the establishment of stronger policies that will be more effective at eliminating childhood obesity. A bill that was proposed during the 2007 legislative session, but not yet enacted, complements the 2006 law by focusing on physical education mandates for schools. As summarized by the National Conference of State Legislatures (2007):

PA HB 189-As part of a more comprehensive nutrition and physical education bill, would have required that in addition to physical education, at least 15 minutes of daily recess be offered in the elementary grades for each two and one-half periods of instructional time in core subjects areas. (¶ 96)

Another bill that has been enacted for implementation during the 2007-2008 school years is related to measuring students' body mass index (BMI). "[BMI] measurement will be required for students in all grades during the 2007-2008 school years. Parents will receive letters about the BMI results that encourage them to share the information with their family physician" (National Conference of State Legislatures, 2007, ¶ 37). This law differs from legislation

previously discussed, because it focuses on providing parents with important information regarding their child's risk of becoming overweight or obese, and informs them of the resources available to help them if their child is at an unhealthy weight.

Pennsylvania has been very proactive in proposing and passing legislation to provide more resources and support for school districts to implement strong nutrition and wellness programs. Pennsylvania is also one of the few states that have been successful at developing new policies to combat childhood obesity. However, there is an ongoing need to continue legislative efforts to transform these policies from proposals into law.

8.0 PROPOSED PREVENTION PROJECT: DESCRIPTION AND THEORIES

Documented evidence indicates that implementation of school wellness programs has met with only limited success. One causal factor is the lack of support from school administrators. “Many districts provide healthy guidelines, which they ‘encourage’ schools to implement...without establishing any enforceable rules. Some policies do not address nutritional content of lunches, competitive foods or vending machines and merely give schools permission to operate school lunch programs” (Robert Wood Johnson Foundation, 2003, p. 12). It appears that a significant gap exists between the establishment of school nutrition program policies and their implementation and enforcement. The inability or unwillingness of school administrators to be proactive requires that a means be found to obtain more buy-in from parents and the community. The Comprehensive School Nutrition Policy Task Force (2002) notes that, because parents control most of the food choices available at home, changes in their behaviors are likely to influence and change their child’s behaviors. Therefore, I am proposing a family-based nutrition program that schools can adopt, which will also be accessible to parents and members of the local community. “It is important to involve the entire family when treating obesity in children. Many studies have demonstrated a familial aggregation of risk factors for obesity, and the family provides the child’s major social learning environment” (Moran, 1999, p. 867). Because changing behavior is a difficult process, children need the support and guidance that

will result if parents take an active role in their school's nutrition program. Research has found that behavior-based theoretical models have been effective. "Theory based interventions include 'underlying themes of readiness to change, perceived benefits and barriers to change, perceived health risk, self-efficacy or confidence regarding behavioral change, and interaction between the individual and socio-cultural environment'" (CDC, 1996, p. 26). These theories seem to be particularly effective with children and adolescents because they are in the stage of their development where they need to be in control of their lives and think only of themselves. As a result, if they are taught self-efficacy skills, they may be more encouraged to make behavior changes. McLean, Griffin, Toney and Hardeman (2003) found that, the greater the number of behavior change techniques taught to parents and children, the more successful the weight loss or weight control program. Combating childhood obesity is about changing negative behaviors and, as evidence has shown, addressing the environment in which the child lives is an important element in that process. Therefore, the Social Cognitive Theory (SCT) will be used in the design and implementation of this family prevention program. Grimes and Grinter discuss the holistic view of health behavior inherent in this model: "Reciprocal determinism is the foundational principle of SCT and it describes the ongoing interaction that exists between the environment, the individual, and the individual's behavior" (Grimes & Grinter, 2007, p. 6). Because of the importance of the role of the family, their involvement will be a vital element in this prevention program. Social Cognitive Theory provides an appropriate means of achieving this objective, as explained by Golan and Weizman (2001):

Social Cognitive Theory addresses both the psychosocial dynamics underlying healthy behavior and the methods of promoting behavior change. Change in the home and in the family environment is also induced, using parental presence and

authority based on the family system theories: mealtime, establishing a positive atmosphere, taking responsibility, and serving both as a source of authority and a role model for the obese child. (p. 103)

These are a few of the important factors that will be addressed in using the Social Cognitive Theory to design the program. Caballero (2004) has found that the majority of successful intervention programs have followed a model based on social cognitive theory aimed at modifying individual, behavioral, and environmental factors associated with obesity risk. One prevention program currently being implemented in Pennsylvania is *We Can!*TM, which focuses on ways to enhance children's physical activity and nutrition. "This program provides community groups and health professionals resources to implement programs and fun activities for parents and youth in communities around the country" (National Heart Lung & Blood Institute, n.d., ¶ 3). "We Can" is a good example of the social cognitive approach, because it addresses all aspects of the influencing factors causing obesity. This intervention program, much like my proposal, would seek to enhance children's knowledge about diet, physical activity and health, as well as promote their self-efficacy for healthful behaviors. Because behavior change is the essential component of prevention programs dealing with childhood obesity, Social Cognitive Theory is an appropriate and effective model for guiding our intervention process.

8.1 PROJECT GOALS AND OBJECTIVES

There are a variety of goals and objectives that we hope to achieve through the implementation of this family-based prevention program, which will address multiple risk factors by providing

education and guidance to parents and children. Some of the principal risk factors that will be addressed include: poor parental dietary behaviors, poor child feeding practices, unhealthy home environment, sedentary activities, and media influence. These risk factors were chosen because the literature identifies them as high causal risk factors. Golan and Weizman (2001) have identified some of the important nutrition and health skills needed to enhance parental knowledge about nutrition: “purchasing healthy foods by reading food labels...preparing health balanced foods and meals...selecting lower fat, higher fiber foods...eating slowly...selecting appropriate serving sizes...increasing self-efficacy in appropriate parental food intake habits...exercising regularly” (Golan & Weizman, 2001, p. 104). Additional tips for parents will be taught based on Canada’s *Family Guide to Physical Activity for Children* (Public Health Agency of Canada, 2002). Recommendations in the Guide include: making brown-bag lunches instead of providing money for lunch; limiting television, computer, and video game time; and organizing neighborhood groups to walk together. Based on these recommendations, our first project goal is to increase nutrition and health skills for both parents and their children. Our main objective, which will be highlighted throughout the prevention program, is to increase family knowledge about nutrition and healthy eating. This objective corresponds to the Healthy People 2010 objectives established to help combat childhood obesity: “19-1 - Increase the proportion of adults who are at a healthy weight, 19-2 - Reduce the proportion of adults who are obese, 19-3 - Reduce the proportion of children and adolescents who are overweight or obese” (HHS, 2006, p. 19-15). Achieving our objectives will advance the Healthy People 2010 objectives, because we will be reaching both children and adults through a nutrition education program. Each individual session in our prevention program will teach something about nutrition and healthy eating, while highlighting specific skills families can use to change their

unhealthy behaviors. CDC (1996) identifies various strategies to enhance healthy eating behaviors, many of which we will incorporate into our program. We will encourage students to examine negative media and social influences by identifying their current resistance capabilities, and teaching them how to develop appropriate responses to these pressures. Most importantly, we will be teaching students and their parents how to identify incentives and set goals for changing their current eating and physical activity behaviors. Lastly, we will teach students how to monitor their progress, revise their goals if needed, and reward themselves for successfully attaining their goals. We will also incorporate CDC (1996) recommendations that students analyze their own environmental barriers to healthy eating and physical activity, and that parents and children be encouraged to explore strategies for overcoming these barriers. Overall, the program is designed to empower families to make lifelong healthy choices.

Our second project goal is to create an environment within the home for healthy habits. SNE (2003 a) discusses this component of the program:

A comprehensive, successful program will focus on promoting and supporting healthful lifestyles for all children at home, in school, and in the community as integral to the well-being of children of all sizes. It will develop and implement activities that (a) create a nurturing environment, (b) provide education on healthful eating, and (c) promote and support opportunities for enjoyable physical activity. (p. 1)

This goal will contribute to the prevention of childhood obesity by improving the home environment through development of healthy habits that may lead to additional healthful benefits. Golan and Weizman (2001) have identified a few techniques that help change the family environment: “practicing regular meal times and schedule between-meal snacks, allocate

individual portions, provide alternative leisure-time activities, create opportunity for physical activities, and reduce stimulus for overeating” (p. 104). While we plan to incorporate all of these objectives into our prevention program, our proposed curriculum will highlight the creation of opportunities for physical activities. This goal is consistent with Healthy People 2010 objective 19-3, which is to “reduce the proportion of children and adolescents who are overweight or obese” (HHS, 2006, p. 19-15). One way we will pursue this objective is to require that participants incorporate a minimum of 30 minutes of daily physical activity into their schedules. Canada’s *Family Guide to Physical Activity for Children* (Public Health Agency of Canada, 2002) suggests encouraging children to build up their physical activity throughout the day, as 30 minutes or more of physical activity can be accumulated in increments as short as 5 to 10 minutes. “Opportunities for physical activity need to be available within the school day, in after-school activities, and at home with family and friends” (SNE, 2003a, p. 2). Our program will encourage children to participate in after-school activities by connecting them to programs established in their schools or within their communities. The program will also identify safe, convenient, appealing, and affordable places within the community for children and parents to spend time engaging in physical activities. The proposed prevention program will be unique among physical education programs in that we will include activities that are innovative and fun for all members of the family. For example, the curriculum provides for an annual family Olympic night at school, and also encourages families to engage in their own family Olympics at home. This activity will challenge children and their families both mentally and physically as they participate in nutrition-related games that promote being physically active and making healthy food choices. Parents will also be provided with additional tips to increase physical activities for the family, such as: play music and dance with your children; play hide and seek;

ride bikes together; go on a treasure hunt; and have your children help with gardening and raking leaves. “The best way to get your child on board with the new, active lifestyle is to commit to the changes yourself...You also encourage your child to be physically active every day if you make it a priority yourself” (Mayo Clinic, 2006, ¶13). Our goal in using a family-based approach for this program is to encourage parents to model the appropriate behavior, thereby motivating their children to make positive, healthful behavior changes as well.

8.2 PROJECT METHODOLOGY

The prevention program will be designed to run for eight weeks. However, once the program is piloted, additional sessions will be added or deleted if needed. Each week there will be one session that is intended to run for two hours, although some sessions may need less time depending on the activities and number of participants. We will designate a two-hour time slot and inform participants that some sessions might not last that long. We plan to pilot the program on a Friday evening, based on the assumption that parents will be more flexible at the end of the workweek. To inform parents about the new prevention program, the school clerical staff will be asked to generate a standard school-wide address list that will be mailed to all families in the district. Flyers will be distributed and posted within the school and community requesting those interested in participating in the program to call or e-mail a designated staff person at the school. We will also have informational booths at parent teacher conferences to answer questions and encourage participation by parents. In order to deal with the challenges of recruiting parents who may have too many barriers impeding their interest in our program, we will incorporate a scare

tactic to show the severity of the problem and the importance of their participation for their family's health. We may also try recruiting parents who are uninterested through highlighting the positive outcomes that will result from joining this program. For our pilot program we are limiting participation to a maximum of 10 families and 40 individuals. We have established a limit in order to control use of our resources, and to facilitate development of a warm, caring environment. There is no specific minimum participation requirement for the pilot program; after sufficient time has elapsed for responses, the program will begin with the families that have elected to participate. Those parents who are interested in learning more about nutrition and obesity, but are unable or unwilling to attend the sessions, will be asked to complete a survey as part of our evaluation process. Each session will begin with some form of welcoming activity such as trust falls, or any type of team building activity. This will be followed by an open discussion of the successes and difficulties families faced between sessions. Our welcoming activity is designed for participants to interact with each other, and to provide feedback on how they are doing throughout the program. Our goal is for participants to learn from other members of the group, and to encourage them to challenge and change their negative behaviors in a supportive setting. "A nurturing environment promotes all aspects of growth and development for children, physically, mentally and socially. This environment fosters self-esteem, body satisfaction, and a positive body image, qualities that facilitate health-promoting behaviors" (SNE, 2003a, p. 2). Establishing this type of environment from the outset is important for both parents and children, and will enable families to trust one another and feel at ease in discussing their struggles with poor eating habits and obesity.

Following the open discussion, we will begin the weekly activity and information session. Each week we will address issues associated with childhood obesity by focusing on a

specific topic targeted to our identified goals. There are a variety of topics that will be included in our curriculum, which will be based on our two program goals: increasing knowledge of proper nutrition and healthy eating habits, and encouraging healthy behaviors in the home environment. Two examples of topic-specific activities that we will implement in our curriculum are: building food creatures, which will educate families about healthy fruits and vegetables by creating their own artistic creatures; and family gardening projects, which will teach parents and children how to garden and understand the process of how fruits and vegetables grow. Harper (2006) has identified unhealthy changes in eating habits in recent decades as one factor influencing childhood obesity. Our program will be addressing this factor by educating families on ways to adopt healthy dietary behaviors, while providing information on the nutritional shortcomings of highly processed and fast food meal options. We intend to address this latter issue by implementing the CDC (1996) recommendation that students be taught how to evaluate nutrition claims from advertisements and nutrition-related news stories. As the sessions progress, new educational material will be presented, but we will also review material presented in previous sessions. Our goal is to drive home the information previously discussed by reinforcing the material each week. HHS (2004) states that it is imperative to ensure that communications about nutrition, healthy eating, and obesity are culturally appropriate. The curriculum material that we are utilizing has been designed to be both culturally relevant and age appropriate. The amount of nutrition education that will be covered in each session will vary, as we hope to tie in the educational material with some sort of physical activity. Some sessions may have a stronger emphasis on physical education than others, but our goal is to provide families with fun, physical activities that they can incorporate into their home environment. It will be necessary to develop activities that are appropriate for the age groups

involved, and sufficient time must be devoted to teaching the proper way to engage in the activities so that they will continue to be used in the home or community. SNE (2003a) discusses the importance of providing age-based physical activities:

Among young children, the appropriate focus of physical activity is to provide ample opportunity for active free play and movement. As children mature, they need to master movement skills so that they can participate confidently in many different forms of activity and come to understand that fitness is intimately related to long-term health and well-being. (p. 2)

Because our prevention program is geared towards middle school children, teaching and modeling proper techniques for the physical activities is imperative. It is also essential that our instructions be very specific, and that we use abstract forms of teaching such as incorporating pictures and drawings in our handouts. We have chosen to focus our program on middle school children because research indicates that targeting younger children can have better long-term effects. “The severity and age at which obesity is present appear to be significant determinants of whether obesity present in childhood will persist into adulthood....In addition, obesity present in adolescents is much more likely to persist than obesity in younger children” (Dietz, 1999, p. S7). Based on these findings, we have decided to target our program towards younger children in order to maximize the potential opportunity to reduce the prevalence of obesity among our nation’s youth. After the weekly activity is completed, there will be another general discussion or breakout sessions for group members to talk about what they learned, and how they will incorporate that knowledge into making behavioral changes. Participants may be asked to complete assignments between sessions; however they will be fun and family-oriented, such as having them create their own family Olympics.

In order to implement our prevention program, support and approval must be obtained from several key stakeholders. The U. S. Department of Agriculture (2007) “Team Nutrition” program recommends first determining if there is currently a team in the school or community that addresses student nutrition and health issues. If there is a team in place, we will do some research to identify and evaluate the scope of any existing nutrition and physical activity efforts that are currently underway. This will assist us in determining how our program can be used to fill in any gaps or add to the existing programs. We would then contact the team directly, and work with them to implement our program. If we find that a team does not exist, it will be our role to help the school create one, which would include principals, teachers, parents, school board members, school nurses, and other interested community members. The more involvement we obtain from key stakeholders, the more support and buy-in we will receive from the community. The Team Nutrition program states that buy-in is crucial to ensure that successful results are achieved, and that all participants benefit from the experience. In order to obtain stakeholder buy-in, we will need to highlight the benefits of the program, and demonstrate how participation would be of value to them. To begin the process, the school administration must be contacted to determine their willingness to participate, and obtain their approval of the program concept. Their participation and support will be facilitated by involving them in the formulation of the plan for implementation within the school community. We also need to engage school professionals to administer the program, which will require that they be trained prior to implementation. It will be the responsibility of the school administrators to select two project coordinators to run the prevention program. The coordinators’ responsibilities will include evaluating the program and reporting those findings to the school administrators, who will use that information to meet government-mandated reporting requirements. The Child

Nutrition and WIC Reauthorization Act of 2004 provides money to schools for creating a healthier school environment. One of the major objectives of the Act is “creating new ways to improve the nutrition environment in schools by requiring school districts to adopt local school wellness policies that address healthy eating and physical activity” (Food Research & Action Center, 2005, ¶ 1). The federal government is involved because it is providing funding to the states for nutrition education, which will, in turn, be providing financial support for the program. Therefore, this program must be properly designed so that it will qualify for state approval and funding under the Act. Although this program has been designed to best meet the needs of the primary stakeholders - participating children and parents - it will be the responsibility of school administrators to properly implement the program within their schools, which encompasses the need to ensure that it meets all federal and state guidelines for wellness programs. Therefore, administrators will have the authority to make changes to the program to meet these requirements. In addition, the program will provide administrators with the flexibility to make changes that are tailored to meet the specific needs of their school community, or that will enhance the overall success of the program.

8.3 PROJECT EVALUATION

In order to determine the effectiveness of the program we will need to incorporate evaluation methods into the program methodology. The evaluation is focused on determining the extent to which the program’s objectives have been achieved by measuring their outcomes. We will conduct a pre and post program survey to evaluate the level of parental knowledge,

which will help us determine the effectiveness of our program and the extent to which our program objectives have been met. There is no comparison group at this time because we are still piloting the program, and have not had the opportunity to assign and recruit a comparison group. The survey will consist of a series of questions regarding proper nutrition and healthy eating habits. We will conduct the survey during the first session to order to determine participants' knowledge of the subject matter prior to receiving any nutrition education from our program leaders. We will use a series of both quantitative and qualitative questions to obtain a good understanding of what the participants know and don't know regarding nutrition and healthy eating. Some examples include: What are the five essential food groups? How many servings of fruits should you have a day? List two foods that are high in fat. What is a balanced diet in your own words? The survey will be designed to ask questions regarding information that will be presented in the program sessions. Upon completion of the program, we will again ask the participants to fill out the survey in order to compare the two tests scores. This technique will provide us with accurate information regarding the extent to which participants have gained an understanding of proper nutrition and healthy eating habits.

We will also be conducting a process evaluation to assess ongoing project activities and gather information to monitor and improve the project. "Formative evaluation begins during project development and continues throughout the life of the project" (National Science Foundation, 2002, p. 8). We will be distributing brief satisfaction surveys to participants, the program leader, school administrators and other involved stakeholders at the end of each program session, and will also have them complete one final satisfaction survey focusing on the entire process. We intend to gather information regarding the success of the program activities by asking participants to indicate their interest level, what they liked and disliked, and the extent

to which their objectives were met. We have chosen this method of evaluation so that the feedback obtained can be used to make any needed changes to the program. To build a stronger evaluation of the program, we will also be interviewing participants to obtain additional data regarding any modifications that should be made to the program to produce more effective outcomes. “By using different sources and methods at various points in the evaluation process, the evaluation team can build on the strength of each type of data collection and minimize weaknesses of any single approach” (National Science Foundation, 2002, p. 47). This process will involve in-depth interviews that do not follow a rigid interview structure. Instead, the interview will consist of a series of open-ended questions that will give participants the opportunity to discuss changes they think should be made to the program, or to offer additional suggestions. Our initial interview questions will be the same for all participants; however, additional questions may vary based on individual responses. All participant responses will be documented in writing by the interviewer. The responses will be written by the interviewer, who will most likely be one of the program coordinators. We have chosen this technique because it encourages capturing respondents’ true perceptions, thoughts and feelings regarding the program. This technique will also help us to enhance our program by identifying any weaknesses or problem areas. Finally, it will provide an accurate understanding of what people thought about the program, and whether or not they felt it was useful. This feedback is essential for continuation of our funding, and maintaining buy-in from school administrators and all other stakeholders. We believe that, by using this approach, we will be able to successfully evaluate the outcomes of the program.

After the completion of the evaluation process, it will be imperative that we release the information of the study to the key stakeholders. We will formulate our findings in a case report

which will include the background of the program, a list of the study questions and what they were intended to address, data analysis, description of the findings, and conclusions and recommendations. “This requires pulling together the data collected, distilling the findings in light of the questions the evaluation was originally designed to address, and disseminating the information” (National Science Foundation, 2002, p. 35). The report will provide the means by which information regarding the program outcomes will be conveyed to the key stakeholders involved in the program. We will be disseminating the report to the school administrators, program leaders, group participants, members of the school community, and parents within the community. In order to most effectively release the report’s findings, we will hold two informational meetings: one formal and one informal. What we choose to highlight, and which stakeholder groups are included, is likely to vary between the informal and formal meetings. For example, “A report to the community that is directly involved, or might be involved, would be presented in a less formal and detailed fashion, with a minimum of technical details” (National Science Foundation, 2002, p. 41). Throughout the entire reporting process we will be highlighting our program’s goals, the results of our evaluation surveys, and any ongoing efforts that may be planned. One of the outcomes that we hope to achieve is that the program will have impacted the overall health of the school and local community. If successful, our program will impact family lifestyles by encouraging positive behavior change, developing stronger family relationships, increasing understanding of good nutrition and eating habits, and increasing the amount of family-focused physical activity. If achieved, these results should lead to a reduction in the incidence of obesity among children and parents within the community. Because these outcomes are important elements of the benefits to be achieved from the program, we intend to highlight them within our report and in our community meetings. The more information we can

provide to the identified stakeholders, the more likely people within the community will develop a better understanding of the magnitude of the obesity epidemic and what can be done to address it.

8.4 PROJECT RESOURCES REQUIRED

There are a variety of resources that are required for the implementation of the program. We will first, and most importantly, have to select a school community in which we can implement our program. It will be necessary to get the school administration on-board with our program's goals and implementation plan for the school community. Promotion of the program will be done by school staff, and by distributing letters to all parents with children in middle school. We will have to train at least two staff members from the school to become familiar with and run the program curriculum. Also, these staff members will need to receive additional compensation for their involvement. Additional school and community volunteers, whose assistance will be solicited during the early stages of the program, will supplement their efforts. The volunteers will be used to help promote the program, and encourage families to participate by educating them about the benefits it offers. They will be distributing flyers, and attending school community meetings and activities to promote the program. Access to school gymnasiums will also have to be provided for our physical activities and games. An additional room with all required technical resources, as well as a sufficient number of tables and chairs, will be needed for the educational portion of the program. The school will have to provide us with at least a two-hour time slot for eight weeks on Friday evenings. There are a variety of art supplies, copies

of nutritional materials, sports equipment, fresh fruits and vegetables, and paper products that will need to be purchased. These are the most important resources that are required for the implementation of the program. Some of these items can be acquired at the outset of the program, while other materials will need to be purchased weekly, based on the planned curriculum. More detailed information regarding the activity materials may be found in the curriculum provided in Appendix A.

APPENDIX A

CURRICULUM

Session 1: Food Guide Pyramid Matching Game

Welcoming Activity: Give each group member a piece of paper and a pen. Ask each member to write down one interesting fact about themselves and one reason why they decided to join the program. When completed, give everyone a chance to report what they wrote to the entire group.

Open Discussion: Allow time for group members to ask any questions or voice any concerns they may have about the program.

Introduction of food guide pyramid and successful tips for parents:
Program director will review the attached sheet with the group.

Food matching game:

Preparation: Enlarge and copy the food picture pages provided in this booklet. Make two copies of each page. Cut out the food pictures, making sure all the cards are the same size.

How to play: Place all cards face down on the floor or table. Children take turns turning over two cards to find a match. The object of the game is for the children to remember where the cards are so they can make a match. The child with the most matches at the end of the game is the winner. When a matching pair is found, the child keeps those cards. If the cards do not match, the child turns the cards over, leaving them in place. Continue taking turns until all the card pairs are matched. As a family, help children to sort food pictures into the five food groups shown on the Food Guide Pyramid. You can show them a picture of the Food Guide Pyramid and have them place the foods on the different levels.

Discussion: Discuss where foods come from. Using the pictures, ask children which of the foods they have eaten recently. Were any of the foods offered at lunch today?

Extended activity: Encourage children to find food pictures in magazines. There are many ways to sort foods. Ask children to invent their own way of sorting foods. Some examples would be by color, dry, fresh, comes in a box, canned, flavors, etc.

Discussion about encouraging favorable food attitudes and good eating habits:

1. Be sensitive to children's needs:
 - a. Remember each child will have a different reaction to food; therefore try and understand each child's personality.
 - b. Parents need to serve age appropriate portions.
2. Help children feel ready to eat:
 - a. Provide a short transition time between activities and mealtimes.
 - b. Tell children a few minutes ahead of time that it will soon be time to eat. This helps them slow down and get ready to eat.
3. Get children interested and involved:
 - a. Encourage children to participate in mealtime. With careful supervision invite them to help with: deciding family meals, buying groceries, preparing dishes, setting the table, bringing food to the table, and cleaning the table after eating.
 - b. Before the children sit down at the table, discuss the foods that will be served.
 - c. Initiate nutrition education discussion at dinner time: For example, ask children about the foods they choose to eat at school and discuss if they are healthy choices. Encourage children to partake in more physical activities.
4. Make eating a pleasure:
 - a. Serve meals in a bright and attractive room. Inform the families that they can create an environment that is fun and attractive, such as making posters that are bright and colorful.
 - b. Select and arrange food on plates in ways that make meals interesting and attractive. To do this, include a variety of colors, flavors, textures, and shapes. Differences in temperature can also add interest. For example, crisp, cool, raw vegetables can be a nice contrast to warm soup.
 - c. Make meals fun and exciting by creating themed meals or adding unique foods.
 - d. Set a good example. Eat at the table with the children and encourage conversation. Invite the children to talk about their food experiences and how the food tastes and smells.
 - e. Discuss what your children's favorite foods are and find ways you can add fruits and vegetables into these meals.
5. Foster positive feelings:
 - a. Allow children to leave food on their plates. They may learn to overeat if they are told to finish their meals or clean their plates.
 - b. Plan plenty of time to allow children to eat without feeling rushed. Include time for family meals in your schedule planning.
 - c. Avoid allowing children to use food to gain special attention.
 - d. Never use food as a reward or punishment.

Homework: Introduce one new food into your family

Introduce only one new food at a time. Offer a very small amount (one to two bites) of the new food at first, so that a child learns new flavors and textures. Offer new foods at the beginning of the meal when children are hungry. Allow time for children to look at and examine the new food. Parents need to model a positive attitude when introducing a new food. Explain the new food and discuss ways your family could incorporate it into family meals. If children accept a new food, serve it again soon so they become accustomed to it.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 2: Family Gardening Project

Welcoming Activity: **Amoeba Race**

- A fun game, using a basic biology concept of a cell
- Requires cooperation, competition and close physical interaction. Useful as a simple activity to help group members get comfortable with one another.
- Explain how to create an amoeba. There are 3 parts:
 - a lot of protoplasm
(people who don't mind being close - gather together)
 - a cell wall
(people who like to contain themselves & others - surround the protoplasm, facing outward, linking elbows)
 - a nucleus
(someone with good eyesight and the ability to keep on top of things - should be the nucleus, seated on the shoulders of some of the protoplasm)
- Once the amoeba is formed, try taking a walk through the classroom and in the hallways. A rhythmic chant might be helpful for coordinating movements. (What sort of sound does a one-celled creature make?)
- Finally, try a little cell division. Split into two, create a second nucleus and have an Amoeba Race.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: Program Director will give a brief discussion on gardening and the benefits of gardening in your own home. They will discuss which types of fruits and vegetables are commonly grown and their benefits to their health. Discuss where local farms are located and encourage members to visit a local farm.

Objectives:

- To expand the variety of fruits and vegetables eaten.

- To learn the gardening process and understand how fruits and vegetable grow.

Materials needed:

Container (such as milk carton, bleach jug, coffee can, ice cream tub, or ceramic pot.), seeds, soil, plant fertilizer, tray or plate, water.

Procedure:

1. Select seeds to plant. Some common seeds that grow well in containers are: tomatoes, peppers, radishes, leaf lettuce, cucumbers, and herbs. For more information on variety selections contact your local extension office. Allow your children to help choose the plant they want to grow.
2. Select a container. Match the container to the size of the plant. For example, tomatoes require a much bigger container than herbs. Rinse the container. Punch holes in the bottom, if there are none.
3. In a bucket, combine soil with water until the soil is damp. Fill you container with the damp soil to ½ inch from the top.
4. Read the seed packet to see how far apart and how deep to plant seeds. Cover seeds gently with soil.
5. Keep the seed bed watered well. The seeds need a lot of water, but don't add it all at once. Pour some, let it sink in, and pour some more. Stop pouring when you see water coming out the bottom of the container. Keep a plate or tray under the plant container so the container will not leak. Keep the soil moist, but not sopping wet.
6. Place container(s) in a sunny location: a common place is a windowsill.
7. Once a week add fertilizer, following directions on the label. Take turns adding the fertilizer.
8. Turn the containers often, so that sunlight reaches all sides of the growing plants.
9. As the plants grow larger, use scissors to trim the leaves of side-by-side plants, so they do not touch each other.

Family activities: These activities will be completed once the food is grown

1. When the food is ready to be picked, pick it, wash it, and use it in your next family meal. Discuss with your family the process it took for the food to grow. Discuss the nutritional value of the food, and other ways you could incorporate that food into your diet.
2. If you choose to grow a carrot, turnip or beet you can cut off the top at about 1 inch. Put the top on a saucer, cut side down. Add just enough water to make the bottom of the vegetable top wet. Keep the saucer in a sunny window, adding water every day so the bottom of the vegetable stays wet. New leaves and roots will soon grow. Discuss with your children which fruits and vegetable will grow roots and leaves.

Homework: Choose a few vegetables that your family will grow and give each member their own plant for which they will be responsible.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 3: Creating Food Creatures

Welcoming activity: **Balloon Help**

Start off with everyone in a circle, facing inwards, hands behind back. The objective is for everyone to be in the center keeping all balloons afloat. Put between zero and three balloons in people's hands behind their backs. Participants should not let on to others how many they have. The leader starts by trying to keep three balloons afloat in the center. When it becomes difficult, the leader calls somebody's name and says "X, I need your help"! That person comes in with all their balloons and helps until it becomes difficult and then they call "Y, I need your help!" If a balloon falls on the ground, it must be picked up by someone in the center and kept afloat.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will discuss the benefits of fruits and vegetables on their health, and list what nutrients and vitamins they are getting from these foods. The director will also explain creative ways to incorporate these foods into children's diets.

Objectives:

- To incorporate new fruits and vegetables into participants' diets.
- To teach children that healthy fruits and vegetable taste good.
- To be creative in encouraging children to eat healthy foods.

Materials needed: Choose a variety of fruits such as: bananas, kiwi, strawberries, oranges, apples, blueberries, raspberries, peaches, mangos, pineapples, etc.
Choose a variety of vegetables such as: carrots, cucumber, squash, snow peas, tomatoes, broccoli, cauliflower, celery, peppers, etc.
You will also need plates, tooth picks, and a table to work on.

Procedure:

1. Carefully clean and cut all fruits and vegetables into smaller pieces. For more creativity you can cut the fruits and vegetables into pieces with different shapes and sizes.
2. Spread out the pieces on the table and places equal pieces of fruits and vegetables for each member of the family.
3. Make sure everyone washes their hands.
4. Have each person pick a work area.
5. Explain that their task is to create their own creature using the food pieces.
6. Allow them to take as much time and they need. The longer they take the more creative they become.

Family activity:

1. Allow each member of the family to present their creature and explain how they came about making this creature. Once everyone has had a chance to show off their art work let them pull apart their creature and taste the food.
2. Finally, discuss the taste and texture of each fruit and vegetable used to make the creature. Ask each child to describe the taste (whether it is sweet or tart) and the texture (whether it is smooth, crunchy, or chewy).

Homework: Parents will be asked to come up with at least two creative ways to incorporate fruits and vegetables into their children's diets, and implement them during the week.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 4: Food, Family, and Fun

Welcoming Activity: **Survival Exercise**

Group members will be told: *Your plane crashed in the jungle...your group needs to choose the 12 most useful items to survive...*

Choose/rank equipment items in terms of their relative survival value:

- Participants choose/rank the items individually
- Discuss choices/rankings in small group and come to a group consensus
- Score answers against "expert" opinion
- Possible alternative scenarios:
 - Lost at sea or island survival (shipwreck)
 - Desert survival (plane crash)
 - Space or Moon survival

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will discuss family traditions and the history of family cooking. The benefits of family cooking and history of cookbooks will also be covered.

Objectives:

- To introduce different food recipes into your family's diet.
- To learn about different ethnic foods and cultural traditions.
- To learn about people in your community and how others are affected by the obesity epidemic.

- To create a school-wide team nutrition cookbook for use in your community.

Materials needed:

You will need to identify a source to print your cookbook. It can be done in school or through an outside source. To cover the cost you may want to consider selling the cookbook for a nominal price.

Procedure:

1. Decide whether or not you want your cookbook to have a specific theme, e.g., healthy snacks, tastes of the world, 10-minute meals, fabulous fruits and vegetables, etc.
2. Ask each family in the group to submit at least one or two of their favorite “healthy” recipes that are a part of their family’s beliefs or based on their family traditions.
3. Once you have collected all the recipes and compiled the book, you will want to have at least two or three people proofread each recipe. If you have a nutrient analysis software program, analyze the recipes for their nutrient content. You will want to add in the nutrient content alongside the recipe.
4. Determine how many copies of the cookbook you will need, and how you will be printing your cookbook.
5. In addition to featuring healthy recipes you might also want to include other information in your cookbook such as: a graphic of the Food Guide Pyramid (you can download one at: www.usda.gov/cnpp/pyramid.html), a copy of the Dietary Guidelines for Americans, food safety information, or a tip sheet on buying, storing , and preparing fresh produce.
6. Once the cookbook is completed, in the group setting have each family discuss the recipes they included and why they were chosen. Also have families discuss any ethnic or cultural influences associated with the recipes.

Family activity:

1. As a family choose one recipe a week to have for dinner as a family. Allow each family member to report on the taste, texture, and smell. Discuss each ingredient that went into the recipe and what goes into cooking the dish.
2. Encourage classrooms to have a potluck dinner and invite families to bring the dish they submitted for others to taste. Spend time discussing family cooking techniques and other healthy foods families cook.

Homework: Each family will go home and look through their cookbooks, choosing some new recipes to try. They should plan to incorporate at least two new recipes for the week.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 5: Family Olympics

Welcoming Activity: All Aboard!

- This activity requires working together in close physical proximity in order to solve a practical, physical problem. It tends to emphasize group communication, cooperation, patience and problem solving strategy, as well as issues related to physical self and physical proximity.
- The activity can be run in many different ways.
- Basic method: Ask the whole group to try to fit inside a small area which can be marked by:
 - small platforms, or
 - a circle of rope, or
 - a tarpaulin or blanket
- When the group succeeds, decrease the area (i.e. changing platforms, shrinking the circle, or folding the tarp) and challenge the group again. How far can the group go?
- Cautions: Obviously people are going to need to feel physically comfortable in order to get physically close and be supportive of one another. Make sure people are warmed up and preferably have removed excessive jewelry, watches, etc.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will discuss the history of the Olympics. He/she will describe each type of sporting event and the benefits that event has on participant health. A discussion of different physical activities and their benefits will also be provided.

Objectives:

- Students will be challenged physically as well as mentally while they play nutrition-related games that promote physical activity and making healthy food choices. The goal is to increase physical activity among children and families.
- To enhance family bonding and communication.
- To teach children that physical activity is fun, feels good, can be competitive and is good for you.

Materials needed: Create gold, silver, and bronze “medals” (out of construction paper), which will be handed out to the winners at the end of the competition. Additional materials will vary based on the games selected by families.

Procedure: This can be done at home or within the group setting (this procedure is for the group setting):

1. First, choose a location for the event. You want to make sure you have enough space to hold a variety of events.
2. Schedule a date and a time for the Olympic event. Preferably choose a weekend or Friday evening when families are likely to attend.
3. Recruit volunteers such as school staff members, parents, high school students, and community members to be in charge of the Olympic events.
4. You may want to consider providing a healthy snack and drink for the Olympic participants. This can be provided by the group members or you can contact the school foodservice manager.
5. Next, decide which type of events you want to conduct. You can find excellent ideas from the Team Nutrition Resource Link under Community Nutrition Action Kit. A few ideas are healthy hopscotch, the great grain obstacle, running around the pyramid, and nutrition wheel.
6. Create a simple evaluation form for students to keep track of the events in which they participated. Make sure it is age appropriate and that each child will be able to fill it out.
7. Send out letters to everyone who has agreed to help with the events. You want to remind them of the date, time, and what they will be doing.
8. Send out letters or flyers to everyone involved in the group along with people from the school community explaining the event and encouraging participation among the school community.
9. Once the event begins it is up to you and the organizers to choose how you want to run the Olympic events. For example, you can have multiple events going on at one time or one event at a time (this may depend of the number of people who attend and how many are signed up to help).

Family Activities:

1. As a family you can prepare a few days or weeks before the event by practicing activities that will be held at the Olympic event. You can also spend some time engaging in physical activities as a family to get in shape before the event.
2. As a family you can also help develop a catchy flyer that will invite parents from the community to attend the Team Nutrition Olympics.
3. You can also discuss the benefits of being involved in the Olympics, and ask each child the positives and negatives of being in a competition.

Homework: Families can hold their own family Olympics by creating their own unique games.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 6: Eating the Alphabet

Welcoming Activity: Zoom & Re-Zoom

- This engaging group activity helps develop perspective, communication skills, and problem-solving skills.
- Based on the intriguing, wordless, picture books "Zoom" and "Re-Zoom" by Istvan Banyai, which consist of 31 and 30 sequential "pictures within pictures". The Zoom narrative moves from a rooster to a ship to a city street to a desert island to outer space. Zoom has been published in 18 countries. The Re-Zoom narrative moves from an Egyptian hieroglyphic to a film set to an elephant ride to a billboard to a train.
- Hand out one picture per person (make sure a continuous sequence is used).
- Explain that participants may only look at their own pictures and must keep their pictures hidden from others.
- Encourage participants to study their picture, since it contains important information to help solve a problem.
- The challenge is for the group to sequence the pictures in the correct order without looking at one another's pictures.
- Participants will generally mill around talking to others to see whether their pictures have anything in common. Sometimes leadership efforts will emerge as they try to understand the overall story.
- When the group believes they have all the pictures in order (usually after ~15 minutes), the pictures can be revealed for everyone to see.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will discuss facts about fat and its effects on health. He/she will provide helpful tips on how to limit fat within the diet. The discussion will also identify health diseases that are most commonly associated with obesity, and recommend preventive measures for both adults and children.

Objectives:

- To incorporate more fruits and vegetables into the diet.
- To educate parents and children about the variety of fruits and vegetables, and explore the texture and taste of each of the foods.
- To learn about the diverse places fruits and vegetables are grown and how they are produced.
- To explore how you can incorporate each fruit or vegetable into your family meals or family recipes.

Materials needed: Fruits and vegetables that begin with the letters A-Z (one or two for each letter), paper plates, and napkins.

Procedure: This will be done in one of the curriculum sessions, but can also be done at home by choosing a different letter each week.

1. A week prior to this session you will want to brainstorm with you group to come up with a list of fruits and vegetables that being with the letters A-Z.
2. The program administrator will purchase the fruits and vegetables so that there are enough for everyone within the group to sample.
3. You will want to clean and cut the fruits and vegetables so they will be ready to eat.
4. Place the food out on plates in order from A-Z, along with a note card identifying the food
5. Once everyone arrives, have a brief discussion of the benefits fruits and vegetables have on the diet.
6. Prior to the tasting give a brief description of the food they will be sampling. Begin the taste testing starting with the letter A and ending with the letter Z.
7. Before moving on to the next letter tasting, have the group discuss the taste, texture, and smell of the food and report on their likes and dislikes.
8. Once you have tasted all the foods from the alphabet have group members discuss ways in which they could incorporate these foods into their diets and family meals.

Family activities:

1. Discuss as a family which of the new fruits and vegetables sampled they liked, and would possibly want to incorporate into their family diet. You could also plan to incorporate at least one new food into family meals once a week.
2. As a family you could plan a field trip to a farmers' market to look at the locally grown fresh fruits and vegetables in your area. If there is no farmers' market, you can spend some time looking at the produce section in your local grocery store.

Examples of foods from the alphabet are: apricots, broccoli, cherries, dates, eggplant, figs, green pepper, huckleberries, Indian corn, jalapenos, kiwifruit, lima beans, mushrooms, nectarines, oranges, papaya, quince, rutabaga, star fruit, turnips, ugli fruit, vegetable marrow, water chestnuts, xigua, yams, and zucchini.

Web Link: www.nal.usda.gov/fnic

The food and nutrition information center will provide you with an opportunity to select any food and nutrition topic from A to Z! It also features everything you would want to know about the Dietary Guidelines, Food Guide Pyramid, and the most frequently asked consumer questions.

Homework: Ask each family to spend one night discussing their family's health history to become aware of the factors that may cause them to be at-risk for obesity-related diseases.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 7: SENSE-ational Me! Health Fair

Welcoming Activity: **Running Free**

- Find a large, flat area with soft ground, e.g. a gym.
- Make sure people are warmed up, stretched and ready for running.
- Invite participants to find a partner.
- Hand out one blindfold per pair.
- One person puts the blindfold on and holds hands with his/her partner.
- Ask the seeing person to take his/her partner on a:
 - slow walk (~a couple of minutes)
 - a normal-paced walk (~1 minute)
 - a fast walk (~30 secs)
 - a jog (~30 secs)
 - a run (~15 secs)
 - a fast run (~15 secs)
- Allow participants time to relax, switch roles, and then take them through the same sequence.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will discuss the benefits of exercising and give the recommended amount adults and children should target. Also, he/she will discuss how and where families can engage in physical exercise within their local community.

Objectives:

- To provide children and families the opportunity to use their five senses (sight, sound, touch, smell, and taste), and participate in games and activities.
- To provide children and parents the opportunity to learn how to use their senses to discover different foods.
- To expand the variety of foods in children's diets.

Materials: The materials will vary based on the different activities chosen.

Procedures: The steps for this event have been separated into each of the 5 different activities.

Sight Sense-station: What Food Am I?

1. Create a giant collage-style poster of a variety of health foods. Make sure you include plenty of fruits and vegetables that are most colorful.
2. Write the names of the foods featured on the poster on small pieces of card stock paper.
3. Have each group member in turn match the correct food name with the picture.
4. Hint: use Velcro on both the poster and the backs of the cards to make them stick.
5. Write the number of correct answers for this activity on the participants' recording sheets.

Touch Sense-station: Mystery Foods

1. Gather five large, men's tube socks.
2. Choose five different foods that are unusual to touch.
3. Inside the bottom of the sock, place a food that feels unusual to touch (e.g. kiwifruit, rutabaga, rice, a coconut, a walnut, dry beans, etc.)
4. Ask students to use their sense of touch to guess what the mystery foods are.
5. Hint: Don't use foods that will easily crush inside the sock.
6. Write the number of correct answers for this activity on the participants' recording sheets.

Sound Sense-station: Can You Hear Me!

1. To set up this activity, make a tape of someone doing these five health activities: brushing teeth, exercising, washing hands, sleeping, and eating something healthy such as carrots.
2. Set up your table with five listening stations with headphones. (Ask participants to bring in extra headphones if you don't have enough).
3. Create a worksheet to go with your activity that has the numbers 1-5 on the left side, and the picture of the health activity (e.g. brushing teeth) on the right.
4. Ask the participants to listen to the tape and to "connect" the sounds with the pictures.
5. Write the number of correct answers for this activity on the participants' recording sheets.

Smell Sense-station: The Nose Knows

1. To set up the activity, paint the outside of 5-10 clean, dry baby food jars with dark blue or black poster paint.
2. Poke tiny holes in the lids and number each jar with permanent marker.
3. Choose 5-10 distinct foods that have a strong odor such as coffee, cinnamon, onion, garlic, orange, lemon, strawberries, pepper, anchovies, or parmesan cheese.
4. Inside each jar, place one of the foods that have a distinct odor.
5. Ask participants to use their sense of smell to guess what's inside the jar.
6. Write the number of correct answers for this activity on the participants' recording sheets.

Taste Sense-station: A School Meals Tasting Party

1. Students can taste and rate samples of new dishes made using Team Nutrition recipes that are being considered for the school lunch or breakfast menu.

2. Have the participants rate the taste of the foods on a scale from 1-10.

Once all activities are complete, add up each participant's scores from all activities and reward the three highest scores.

Family Activity:

1. As a family you can hold your own SENSE-ational Me! Event on a smaller scale. Discuss as a family what each member of the family learned by participating in this event.

Homework: Parents and children will discuss what sports and physical activities they enjoy, and engage in at least one activity one day a week (families should try for more than once a week if possible).

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

Session 8: Reading Food Labels

Welcoming Activity: **Chicken Stretch**

- Note: Do not reveal the name of this activity until afterwards! It relies on an element of surprise.
- This is a fun, physical, group warm-up activity which works with all ages.
- In a circle, explain that it is important to warm up one's body from head to toe before participating in physical games and activities.
- Starting with legs, ask people to try to get their knee to touch their chin. Try each leg alternately. Ask for 10 knee to chin touches. It is not easy; some can do it, many can't.
- Then move on to the arms. One side at a time, stick thumb under armpit and "flap" (don't use this word) it up and do a side stretch. Three times on each side.
- Then explain that it is important to warm up one's vocal cords for group games. Grab the skin around your Adam's apple (demonstrate) and waggle it side to side. Ask for some guttural noises (as much as possible) and then ask for some animal noises.
- Finally, put it all together - demonstrate and encourage - walking around raising knees in air, flapping both arms and making animal noises (at some point start encouraging the chicken noises) and you have a mob of warmed up, feeling silly, kind of outfoxed, intrigued participants.

Open Discussion: Ask the group to summarize what we did in the previous session. Next, allow time for each member to report on any successes or challenges they had trying to do their homework activity. Also provide time for any additional questions or concerns members may have.

Introduction: The program director will educate the group on how to properly read food labels. He/she will also discuss how to choose healthy foods when the family is eating out locally or vacationing.

Objectives:

- To learn how to determine amounts of foods.
- To learn how to read a food label.
- To learn how to make healthier snack choices.

Materials: Box of high-sugar cereal (one that is sugar coated), 1 liter of soda (not diet), 1 large bag of chips (more than 2 servings), 2 large bowls, one 24-oz. cup, measuring cup for dry foods, measuring cup for liquids.

Procedures:

1. Set out a box of high-sugar cereal and a large bowl, a liter of soda and 24-oz. cup, and a large bag of chips and large bowl. Ask for three youth volunteers to serve themselves from the choices. Do not explain what the activity is about. Simply ask them to take as much as they would normally. It is important to tell the participants not to eat the food until after the activity is completed.
2. Ask three new volunteers to measure out how much of each food/liquid was selected (use measuring cups).
 - a. Ask the group if they think what was selected is equal to one serving size on the product's nutrition label.
 - b. How do they know?
 - c. Ask the group where they can find information about serving size.
3. Have three new volunteers check the nutrition label and read aloud what the actual serving size is for each food/liquid. Compare what was selected to one serving according to the nutrition label. Were the amounts more or less than what the label indicated is a serving size? Have youth participants figure out how many servings were actually selected.
4. Ask the group how much sugar they think is in the amount of cereal and soda selected, and how much fat is in the number of chips chosen. (Remind them that they can find this information on the nutrition label.) Ask them if they think the information on each product label applies to what they served themselves. In other words, is what was served equal to what is considered a serving according to the product label?
5. Have three new volunteers look at the nutrition label to find out how much fat or sugar is in one serving. Multiply this amount by the number of servings that were selected to find out how much fat or sugar would have been consumed.

Family Activity: Review and discuss the importance of the amount of food consumed and serving sizes. (Refer to MyPyramid for the sample daily amount information for 2,000 calories.) Sometimes we do not realize how much or what we are eating. It is especially important to think about serving size when it comes to snack foods, because they are often high in sugar and fat. What we think might be a reasonable amount of a certain food may actually be an unhealthy amount that is high in sugar and fat. Remind children that they can find out how much one serving is by reading the product's nutrition label. It is important to realize that all the information provided applies to one serving as listed on the nutrition label.

Breakout discussion: Allow group members to talk about what they learned and how they will incorporate that knowledge into making behavior changes.

APPENDIX B

LOGIC MODEL (ADAPTED FROM KELLOGG FOUNDATION MODEL)

Resources/Inputs	Activities	Outputs	Outcomes	Impact
<p>1. Staff member trained in nutrition/ physical education curriculum. Additional school or community volunteers (depending on activity).</p> <p>2. Salary for staff member.</p> <p>3. Large classroom or gym.</p> <p>4. Copies of nutrition education material and any additional handouts (e.g. food guide pyramid).</p> <p>5. Art supplies: poster board, stock paper, markers, pencils, glue, scissors, ribbons, string, & paint.</p> <p>6. Pot, seeds, soil, plant fertilizer, tray or plate, water.</p> <p>7. Variety of fruits and vegetables (include all shapes, sizes, colors and textures).</p>	<p>1. Food matching game.</p> <p>2. Family gardening project.</p> <p>3. Creating food creatures.</p> <p>4. Food, Family, and Fun.</p> <p>5. Family Olympics.</p> <p>6. Eating the alphabet.</p> <p>7. SENSE-ational Me! Health Fair.</p> <p>8. Opening and closing discussions.</p>	<p>1. Will have completed 8 week curriculum.</p> <p>2. School will adopt a new family/school based program.</p> <p>3. Families will have nutrition information, nutrition activities, and physical activities they can take with them.</p> <p>4. Group will have created a diverse family focused cookbook.</p>	<p>1. Group members increase time spent with their families.</p> <p>2. Relationship between different groups of families.</p> <p>3. Decrease the number of obese children.</p> <p>4. Decrease the number of obese parents.</p> <p>5. Improve nutrition and eating habits.</p> <p>6. Increase knowledge of proper nutrition</p>	<p>1. Improved family relationships.</p> <p>2. Positive influence on family lifestyle.</p> <p>3. Increased awareness of obesity issue in the school community.</p> <p>4. Increased awareness of obesity issue in the local community.</p> <p>5. Positive behavior change among group members and the school community.</p>

<p>8. Fruits and vegetables with letters from A to Z</p> <p>9. Variety of foods that have a strong odor.</p> <p>10. Napkins, plates, toothpicks, baby jars, socks, headphones, videotapes.</p> <p>11. Variety of sports equipment (will vary based on activities)</p> <p>12. Printing/copy source</p> <p>13. Time commitment</p> <p>14. Participation commitment from parents and family.</p>	<p>9. Planning and scheduling activities (by staff).</p> <p>10. Print/copy flyers and posters for families.</p> <p>11. School staff and personal can help with promoting the program.</p> <p>12. Hang posters in school and surrounding neighborhoods.</p>	<p>5. Family Olympic night will be adopted by the school and held annually.</p> <p>6. Families will have created and grown own plants.</p>	<p>and healthy eating habits.</p> <p>7. Decrease sedentary activity by encouraging physical activity.</p> <p>8. Increase creative thinking.</p>	<p>6. Increased participation among parents in other school activities.</p> <p>7. Positively addressed the obesity epidemic.</p> <p>8. Created a new, culturally appropriate curriculum for ongoing use of the program.</p>
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