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Aggregate Project Paper: Nutrition for Elementary Students

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Assessment

Population

The at-risk population is elementary school students age six through eight. All of the children attend Baker Elementary School in Milford, Michigan. Gender is fairly equally distributed; about fifty percent of the children are male and about fifty percent female. The two main ethnicities that could be determined upon observation of the population are Caucasian and Asian, with the former being the majority.

Significant Health Problems

Common health problems for the stated population include: asthma, childhood obesity, high risk for accidental injury, poor nutrition, sedentary lifestyle, as well as food and seasonal allergies (Hockenberry et al., 2003). Of these problems, childhood obesity and poor nutrition are two of the most significant. Through the Web of Causation, an epidemiological concept, it is possible to determine likely causes of the significant health problems experienced in this population.

Review of Literature

The Web of Causation applies to childhood obesity because there are many factors that influence this health problem (see Appendix A for diagram). Obesity is caused by a complex combination of environment, genetics, and behavior. In a small amount of cases, endocrine disorders and some genetic conditions can cause obesity in children. Most often, obesity is caused by a combination of poor diet and little physical activity. According to the University of Michigan Health Systems, obese children tend to eat foods that are high in fat and calories (University of Michigan, 2007). Portion sizes have significantly increased in the past few years,

which also plays a role in contributing to obesity. Today, children are eating more at each meal, meaning in general they are taking in more calories than in previous decades.

Soft drinks and juices containing high fructose corn syrup are also increasingly popular, especially among children. With non-diet beverages containing large amounts of sugar, children who drink them are consuming extra carbohydrates and calories, which can lead to weight gain (Deghan, et al., 2005). The calories found in these products, especially soda, are “empty” calories, meaning they have little nutritional value. By cutting soda and excess amounts of juice out of a child’s diet, a parent would prevent his or her child from consuming these “empty” and nonessential calories.

Parental influence also plays a large role in causing childhood obesity. In families with one obese parent, the children in that family have an 80% chance of being obese or overweight as well (University of Michigan, 2007). Families who consume fast food are at an even greater risk. Fast food is a cheap and quick alternative to cooking a healthy dinner; for families with little money and/or time, it provides an easy solution to nourish their children. It takes at least one to two hours of vigorous physical activity to offset the consumption of one fast food meal containing 785 calories (Deghan, et al., 2005). If a person, adult or child, were eating meals that fit this category frequently, it would be extremely difficult to not gain weight, especially with the recent trends of decreased physical activity.

The media plays a large role in what children want to eat. There are a myriad of ways that the increased amount of media directed at children influences obesity. Everything from plastering cartoon characters’ faces on cookies and chips, to the greater amount of time children spend in front of the television increases their obesity risk (Kaiser Family Foundation, 2004). Many of the advertisements run on channels geared towards children promote unhealthy foods

such as “juices” made mostly from concentrate, cookies, ice cream, chips, candy, and frozen meals full of unnecessary preservatives and sodium. Overall, the media is a negative influence on children’s health and unfortunately, with more and more advanced technology being developed, this influence will most likely only increase over the coming years.

A lack of physical activity also contributes to childhood obesity. There are more activities available for kids such as video and computer games that encourage a sedentary lifestyle. Children spend more time sitting in front of the television per day than in previous decades, which replaces time that could be spent doing physical activity. This sedentary lifestyle lowers children’s metabolic rates, which leads to weight gain because the body is not processing calories as quickly or effectively (Kaiser Family Foundation, 2004). According to the *Nutrition Journal*, physical activity strongly influenced weight gain in a study of monozygotic twins. The twin that was more physically active gained less weight than the twin that was not (Deghan et al., 2005). Physical activity burns calories; with children consuming excessive amounts of calories decreased physical activity will allow these calories to be stored as adipose tissue.

There is no one single factor that causes a child to become obese. Any combination of these contributing factors can put a child at an increased risk for gaining weight. By improving children’s diets and encouraging physical activity instead of sedentary time in front of the television, parents can significantly decrease their families’ risk of becoming dangerously obese and unhealthy.

Determinants

The determinants influencing childhood obesity include the factors discussed in the web of causation. Lack of exercise, increased portion sizes, consuming foods high in fat and calories, and the influence of the media all play a role in the recent increase in childhood obesity.

Another determinant could be a lack of resources to acquire healthy foods. Without the money or means to get fresh fruits and vegetables, families will be more likely to eat unhealthy and preserved foods. Any one of these conditions alone may not always cause obesity, but any combination of two or more could greatly increase the risk of unnecessary and unhealthy weight gain among both children and adults.

Healthy People 2010

Goal 19-5 from Healthy People 2010 is to increase the proportion of persons aged two years and older who consume at least two daily servings of fruit. Another goal from Healthy People 2010 that applies to this aggregate population is number 19-6, which is to increase the proportion of persons aged two years and older who consume at least three daily servings of vegetables, with at least one-third being dark green or orange vegetables. (Healthy People 2010, 2001)

Health Comparison

According to the Centers for Disease Control and Prevention, in January 2007, 16% of children and adolescents ages six through nineteen years are overweight or obese in the United States (CDC, 2007). Comparatively, 12% of children in Michigan are obese or overweight (Obesity Epidemic, 2006). There were no statistics available for Oakland County specific to children, but the adult obesity rate for the county was 21.4% in 2002 (County Profile, 2003). Although these statistics are not from the same years, the obesity rates are still higher in Oakland County than in both the state and the country. The reason for the large disparity may be due to the fact that the Oakland County statistics are for adults. These adult statistics, however, may be reflective of those for children. According to the University of Michigan Health System,

children who come from families with obese parents tend to be obese themselves (University of Michigan, 2007).

According to County Profile, only 10.2% of people report eating five servings of fruits and vegetables daily, compared to 23.1% statewide and 23.1% nationally (County Profile, 2003). This number is significantly lower than other levels. Although the population polled was adults, it is reasonable to conclude that children's eating habits will reflect the adults' who purchase their food for them.

Available Community Resources

There are various resources available to this aggregate population. Due to the fact that the focus population is children, much of their access to these resources, however, is dependent on their parents or guardians. There are grocery stores and supermarkets in the area (such as Kroger) that sell fresh produce as well as canned and frozen fruits and vegetables. If this population wants to find out more information about healthy eating, the Oakland County Health Department has a multitude of online resources that can be accessed from any computer with the Internet.

Service Gaps and Barriers

Baker Elementary is a Title One school, meaning that there are children who attend that come from families with a low income. Due to this, there are families that may not be able to afford fresh produce, which can be expensive. Transportation to grocery stores may also be a barrier; without a way to get to the store, it would be difficult to go frequently enough to keep fresh produce in the house. For the students, much of their diet most likely depends on what their parents or caregivers eat. If the people taking care of the children do not cook or do not like fruits or vegetables, those foods are probably not purchased or cooked in that household. Time

can also be an issue when it comes to cooking with fresh food. It often takes more time to prepare healthy meals; families are often busy in the evening hours, especially if they have children who play sports or are involved with after-school activities. Without the parents' motivation to put in the effort to cook with healthy food, it is unlikely that the children in those households will get the opportunity to eat well on a regular basis.

Intervention Objectives

Intervention and Rationale

The intervention chosen for this population was an educational presentation about the beneficial effects of fruits and vegetables on a person's health. For this particular topic and age group, an educational presentation was the most appropriate way of communicating information to the population. The intervention was presented to an at-risk population in a controlled setting, which enabled the presenters to more easily captivate the audience's attention. Due to the fact that the poster was a visual the children could interact with while the presenters supplemented the information displayed, a large amount of information was given in a memorable way. Both visual and auditory learners could benefit from this presentation.

The rationale behind this type of intervention was based mainly on the nature of the material presented and the age of the audience. Children between the ages of six and eight are still fairly concrete learners and do best with information that keeps them involved (Hockenberry et al., 2003). By using an interactive presentation, it was easier to hold their attention because it allowed them to interact with the presenters. This interaction allowed for the children to retain more information through "hands-on" learning.

Objectives

After the intervention has been implemented, at least 80% the children will be able to verbalize that fruits and vegetables are healthiest for them. About 75% will be able to state why these types of food are healthy. Also, at least 75% of the children will be able to state how many servings of fruits and vegetables they should consume daily.

Cognitively, the children are learning facts about healthy dietary choices and what types of foods will benefit them most. By making part of the intervention a game, it adds novelty to eating healthy, which could make the children feel excited and happy about trying new fruits and vegetables. Also, the optional “homework” assignment that involves trying even more new healthy foods encourages children to do this with their family and friends. This adds in the possibility of social interaction and normalizing these types of foods among the children’s peers and families.

In a more broad sense, however, the objective is to reduce the incidence of childhood obesity among the aggregate population. In teaching the children about healthy food and encouraging them to try new food that is good for them, hopefully they will begin to make better dietary choices. These choices could, in turn, lead to a healthier aggregate population. This is a broad objective and would be difficult to measure within the scope of this project. It would be possible, however, with a large-scale plan and more resources, to implement this intervention and measure outcomes on a long-term basis.

Plan for Implementation and Evaluation

Plan

The plan for this intervention is to give nutritional information to the aggregate population through a poster activity. The presentation utilizes the Rainbow of Nutrition, a lesson

plan that emphasizes eating fruit and vegetables that are the colors of the rainbow. The presentation includes a poster of a rainbow with removable food that matches each color. Children are encouraged to think of items that could fill in the “missing” fruits and vegetables that correspond to each color. At the beginning of each color category, the beneficial qualities of foods of that color are explained. At the end of the rainbow there is a pot of gold overflowing with coins that have the benefits of healthy eating printed on them. After playing the game, the pot of gold will be explained to the students by stating that they want a “full pot” by eating food all the colors of the rainbow. The presentation concludes with a take-home game for the children that challenges them to try to eat a fruit or vegetable that started with each letter of the alphabet. There is a place on the worksheet to fill out the taste, texture, color, and whether or not the child likes that particular food.

Levels of Intervention

All three levels of intervention were utilized in this aggregate project. Primary Intervention is the inhibition of disease development before it occurs (Trudy Esch, Public Presentation, September 25, 2007). The poster presentation taught children that eating fruits and vegetables could prevent childhood obesity and lead to a healthier lifestyle. This would fall under the categories of disease prevention because the students that are healthy and not already overweight will be learning how to prevent childhood obesity before it occurs.

Secondary Intervention involves early detection and early treatment of a health problem (Trudy Esch, Public Presentation, September 25, 2007). The children who may be learning unhealthy eating habits from friends or family were taught about foods that are healthy for them. These children may already be slightly overweight but not yet obese. By teaching this sub-

population to change their diets, they are receiving a form of “treatment” for their unhealthy habits

Tertiary Intervention is the long-term treatment of a disorder and “rehabilitation of potential functioning,” (Trudy Esch, Public Presentation, September 25, 2007). Among the stated aggregate population, there were children who were already obese. Educating them about healthy dietary habits could potentially lead to long-term lifestyle changes for these children. Realistically, however, it would likely take much more than one poster presentation to get this sub-population to change their lifestyles.

Needed Resources

Reliable resources and faculty approval were the two major resources needed for this intervention. The materials cost very little (under \$15.00), so budgetary problems were not an issue in this instance. Also, the small budget for the intervention would make it easy to duplicate with other similar aggregate populations; other schools with tight budgets could use this same format to present the information. Few personnel were needed – only two presenters and the classroom teachers to help monitor the children. Finding reliable resources was somewhat difficult, especially because the information presented to the children had to be factual and from an approved source.

Creating the poster was the most time-consuming part of the intervention, as it took nearly an entire clinical day from start to finish. The presentation itself was around a half-hour, which is a fairly short period of time required to give the information to the students. This was a positive because the children’s attention spans would not have lasted much longer. The topic and lesson plan had to be pre-approved by School of Nursing faculty before presenting it to the schoolteachers or children. Without this approval, the intervention would have needed to be

redone and resubmitted. The number of children being presented to was the main limitation. With a smaller audience, a better and more interactive game or activity could have been planned (such as a coloring page or word search). But with fifty students present, it would have been difficult to keep everyone's attention with an activity such as this one.

Evaluation

Method of Evaluation

Students' achievement of knowledge was acquired through pre- and post-tests. Three questions were asked to the children prior to the intervention; the same three questions were then asked again after the presentation. This enabled the presenters to judge whether or not the students obtained knowledge they did not previously have. The pre-test questions were only answered partially correct. The questions used were: What kinds of foods do you think you should eat the most of and why? What kinds of foods are healthiest for you? How many fruits and vegetables do you eat everyday?

After the intervention, at least 95% of the children were able to correctly identify which types of foods are healthiest for them. Around the same amount were able to verbalize that they should eat mostly fruits and vegetables. The presentation ran longer than expected, thus the presenters were not able to explain the pot of gold on the poster nor discuss recommended servings per day of fruits and vegetables. Without these topics included in the intervention, it was not feasible to evaluate whether or not the children obtained this knowledge.

Strengths and Weaknesses

Overall, this aggregate project went well. The students seemed to enjoy the presentation, especially the game. Nearly every student either participated or wanted to participate; it was hard to decide which child to call on to answer questions because nearly each one was equally

enthusiastic. The poster was colorful and it allowed for easy interaction with the students. Children gained knowledge of different types of fruits and vegetables and learned that they should eat a wide variety of them.

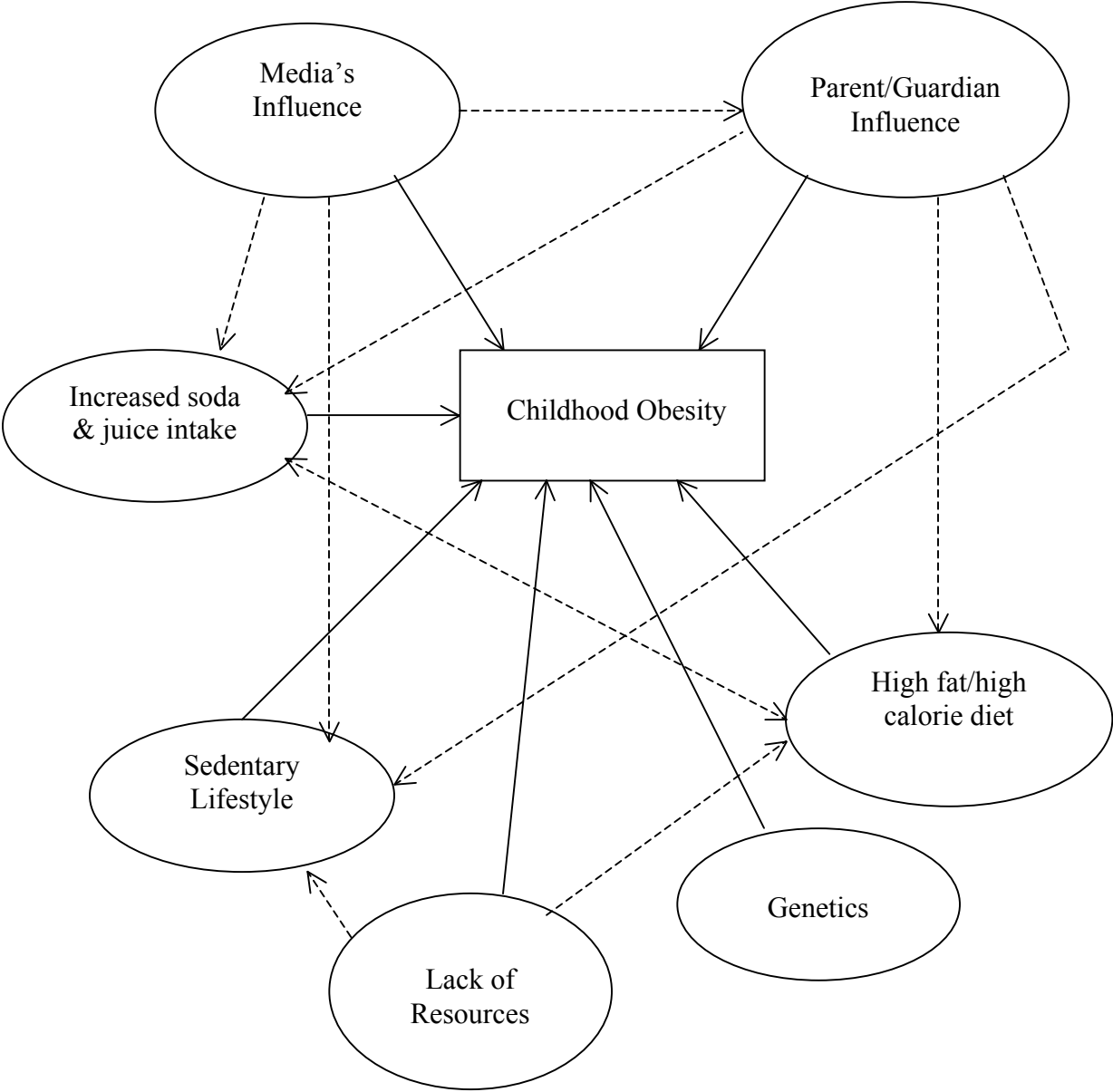
Despite the fact that the presentation did go well, there were some drawbacks. One of the biggest problems occurred because of the number of students present. With around fifty children there, it was difficult to keep them under control and hold everyone's attention. Also, it made it difficult to include all the children that wanted to participate. Despite the students' enthusiasm for the presentation, the game distracted them from some of the information presented. Many of them were more concerned with being called on to place a sticker on the poster than they were with what was being explained about nutrition. The length of the presentation was another weakness. Due to the fact that it ran long, the presenters were not able to give all the desired information to the students. Although the game kept the children engaged, it caused the presentation to go over the allotted 30 minutes.

If implemented again, a few changes would need to be made to this intervention. First, it would be more effective with a smaller group of children. A more intimate setting would make it easier to spend a little more time covering the benefits of each food color. Keeping the children's attention would also be easier if there were fewer of them there at one time. Although the students enjoyed placing the food on the poster themselves, time would probably not have run out if the presenters could have stuck the items to the poster as planned.

Combating childhood obesity is quickly becoming more and more important in today's society. Implementing simple yet effective interventions for elementary school students may be an effective way of providing education for those who may not otherwise learn how to eat healthily. Prevention is key in stopping childhood obesity; beginning this prevention at an early

age will hopefully inhibit more serious health problems from arising secondary to weight gain later in life.

Appendix A: Web of Causation



Resources

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