COUNTERING THE CHILDHOOD OBESITY EPIDEMIC IN MICHIGAN

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ABSTRACT

This report examines the potential of the state of Michigan and its' ability to reduce the cost burden of individuals placed from welfare and health care through the elimination of childhood obesity. Topics examined include the potential interventions to reduce healthcare costs in children by increasing nutrition programs, health education, community programming, and state legislation. This proposal is based upon research conducted by The Centers of Disease Control and Prevention, Journal of Nutrition Education and Behavior, and the United States Department of Agriculture.

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Introduction

According to the Centers for Disease Control and Prevention (CDC), in the 1970s, 5 percent of the children in the United States from the ages 2 to 19 were obese; by 2010, approximately 17 percent of children were obese (Ogden, Carroll, Kit, & Flegal, 2012). Research shows obese male adolescents are 18 times more likely to become obese adults and obese female adolescents were 49 times more likely to become obese adults (Wang, Chyen, Lee, & Lowry, 2008). If this trend is not reversed, obesity rates are expected to increase to 50-60% of the adult population by the year 2020 (Levi, Segal, Laurent, Lang, & Rayburn, 2013). In 2005, the United States spent over $190 billion for obesity-related health care expenditures (Cawley & Meyerhoefer, 2012) and this number will continue to skyrocket unless significant changes are made. The overall physical inactivity healthcare cost to the state of Michigan in 2002 was $8.9 billion dollars (DeJong, Sheppard, Lieber, & Chenoweth, 2003). Figure 1 shows the increase of overweight and obese children from the ages 10 through 17 in Michigan and the United States. Both of which are growing, however, Michigan is growing at a faster rate.

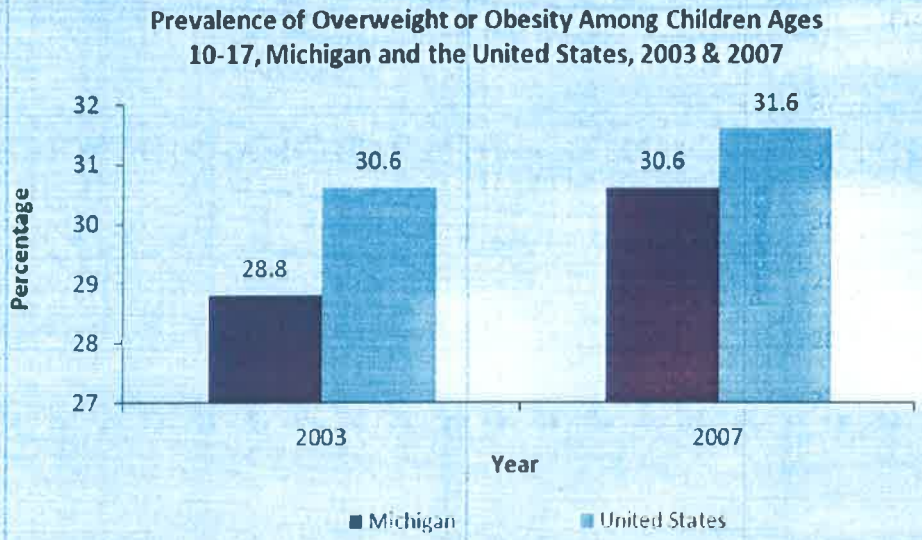

Figure 1. Prevalence of overweight or obesity among children ages 10-17, Michigan and the United States, 2003 and 2007. Adapted from "Michigan Critical Health Indicators 2011", a report done by the Michigan Department of Community Health.

We propose a comprehensive childhood obesity intervention policy that is projected to save the state of Michigan $24,187,000,000 (Levi et al, 2013) over the next twenty years, reverse the trend of childhood obesity, and serve as a model for the rest of our nation to follow. We have identified key risk factors for childhood obesity including sedentary lifestyle, poor diet, lack of proper education, and inability to access affordable healthy food alternatives. In addition, we have prepared incentive propositions for children, parents, and small businesses alike to promote healthy lifestyles.

To address each key risk factor, we have designed a program implementation scheme modeled after previously successful schools, states, and programs using the socioecological

model. This includes implementing individual nutrition education workshops for children, recommendations for their parents and educators, school exercise programs, nutritious school lunch programs, and state legislation to help achieves the goal to eliminate obesity.

Discussion

Sedentary Lifestyle

Michigan's Board of Education did not approve The Physical Education Grade Level Content Expectations until April 2008 (Michigan Department of Education, 2014). Policies prior to the implementation of the new expectations stated that Michigan mandates schools to provide students with physical education and high school graduation requirements (NASBE, 2013). Currently, Michigan's Department of Education provides detailed criteria for schools to follow in order to organize an exercise curriculum for students in every grade level. Having criteria in place and executing the requirements is already a step in the right direction. In 2012, the Michigan Board of Education released a new model for institutions to offer 150 minutes per week of physical activity for students in elementary school and 225 minutes per week of physical activity for students in middle and high school (State Board of Education, 2012).

In years past, we have seen a decrease in the level of focus put on physical education in an effort to raise test scores. For example, in the effort to meet the requirements of The No Child Left Behind Act of 2001, many schools are eliminating nutrition education, physical education, recess, and shortening lunch periods (Briggs, Fleischhacker, & Mueller, 2010). Currently the CDC recommends that children must receive 60 minutes of aerobic, bone strength, and muscle strength exercise at least 3 days a week (Centers for Disease Control & Prevention, 2011). First lady, Michelle Obama, is leading an initiative entitled "Let's Move", and it should be implemented in Michigan as well. This initiative awards children and adults who successfully engage in physical activity five or six days a week for six consecutive weeks with the "Presidential Active Lifestyle Award". Children enjoy achieving awards and winning prizes so a similar reward system should be implemented within the state. This would provide as an incentive for children to be active and play.

Studies have shown again and again the benefits of physical activity in raising blood flow to the brain and brain wave activity, facilitating an increased capacity in memory, spatial skills, and application of learned concepts. Research done by the Robert Wood Johnson Foundation (2009), shows that students increased their scores in academic performances and achieved better attendance. Students in elementary school improved focus by 27% and students in middle school improved their focus by 15% (Johnson, 2009). Having physical activity programs within schools will aid schools to increase test scores, help students improve their sleep and lower stress.

Education

Innovative and interactive health education programs can help build knowledge and encourage healthy behaviors in children so they can build the knowledge and attitudes conducive

to their individual health. While we recognize that a child's first place of education is in the home, we also acknowledge the need to increase the amount of school education programs. In the home, we encourage parents to take the first steps in maintaining their child's weight by: Having proper preconception and prenatal care by planned parenthood or their physician; spending time teaching their children to prepare healthy foods in the kitchen; eliminating sugar-sweetened drinks; providing fruits and vegetable exposure at a young age; limiting electronic media time; ensuring their child's access to physical activity 30 minutes daily; and working with parent-teacher organizations to make sure their school is providing healthy alternatives. However, these alone are not enough and parents with overweight children are often left overwhelmed with the burden of managing their child's weight.

We recommend that schools implement education programs that are compatible with the student's grade level. Elementary school programs should utilize graphic models and visual aids to teach children about the food they are consuming. Active classroom discussion, collaborative work, hands on learning, demonstrations, student projects, field trips, media presentation, role playing, special event, guest speakers, and lecturing are some other examples of interaction within a classroom. Education programs need to be age appropriate for the students. Elementary school programs should utilize graphic models and visual aids to teach children about the food they are consuming. Active classroom discussion, collaborative work, hands on learning, demonstrations, student projects, field trips, media presentation, role playing, special event, guest speakers, and lecturing are some other examples of interaction within a classroom. A study done in various counties in New York showed that teachers in suburban schools taught an average of 12.4 hours of nutrition education compared with those teachers in rural schools who taught an average of 4.2 hours of nutrition education. The teachers that were interviewed for this study also stated that if they had access to more training or support from other sources, then those resources would make teaching and learning more valuable for the teachers and for the students (Watts, Pinero, Alter, & Lancaster, 2012).

One resource that can be made available in schools is partnering up with external programs offered in the community. A program that schools should take more advantage of is Michigan's own 'Health School Action Tools self-assessment Program' available at http://mihealthtools.org/hsat/. This is a website that can be used by schools to assess their current status by analyzing their strengths and determine what changes need to be made. Additionally, the website also offers tips on how to thoroughly formulate and execute their plan. Another program that is offered in Michigan and in other states is the HealthierUS School Challenge. This program can be used to offer grants to various schools and school districts. If schools are able to achieve bronze or silver award recognition, the state can provide that school with funding to increase its efforts to achieve a gold or gold distinction status. Another recommendation would be to involve the teachers and educate them about nutrition so they can teach the students. This is because a classroom teacher spends all day with the group of students and would be inclined to know which area needs more attention and can also implement nutrition for an entire school year instead of having an external member come to teach the students once in an academic year.

A study conducted in a Brooklyn, New York high school showed students who participated in a nineteen week long program FamilyCook program called Diet for a Healthy Planet with Teen Battle Chefs had and overall improvements in their food intake. In this study

students are participating in in-class activities such as classroom lecture, inquiry based problem-solving, and weekly development of gardening and cooking. Students were more likely to try new foods, increase their vegetable and healthy snack intake, as well as having more sit-down meals with their family (Bukhari, Fredericks, & Wylie-Rossett, 2011). This type of program is being conducted in over 85 schools and can be integrated into any school's curriculum. Having this type of program for high school students not only gives them an opportunity to be creative with their food, but also gives them a sense of awareness for the food they are preparing for themselves. This is also a great opportunity for students to reflect on the choices they have made and the ones they are going to make in the future regarding their diets.

Education curriculum can have nutrition related concepts, physical activity and food safety. However, in order for the curriculum to have the most benefits, it needs to be implemented for a long period of time. In this manner, programs are practiced on a regular basis. If education programs are implemented, it is imperative that they are school based. This allows all students to participate and mandates a form of stability for the students, especially if they do not have the same resources at home.

Lunch Programs

Another risk factor we have identified is the scarcity of healthy meals at schools. Often times, school lunches are composed of fatty foods such as pizza, fries, candy and sugary drinks. Although students are offered other options such as fruits, vegetables or packing a lunch, the temptation of eating junk food is still present. Many school programs offer free meal programs for those who qualify as a low-income family. While these children are in need of meals outside their home, they should not be offered unhealthy meal choices that are high in fats and sugar. A large portion of students in the United States depend on breakfast and lunch meal plans through their school as their primary source of nutrition. According to the United States Department of Agriculture in 2009, about 31 million children are participating in school meal plans daily. The National School Lunch Program (NSLP) is also a federally funded program that operates in more than 101,000 public, non-profit private schools, and residential child care institutions throughout the United States (2012). These programs are federally funded, which means the government controls the meals that students are receiving daily. The Former Child Nutrition Act was originally started by chairwoman Blanche Lincoln. Though, First Lady Michelle Obama updated the health reform of kids to the Healthy, Hunger-Free Kids Act in 2010 leading to new school lunch requirements from the United States Department of Agriculture (USDA) in 2011. The standards for these new lunch program are as follows: more whole grains, fruits, and vegetables; low-fat milk dairy products; and less sodium and fat. Menus are planned for grades K-5, 6-8 and 9-12 and will demonstrate to children the right size portions. Additional funding will be made available to schools that meet the new standards. Schools will be reimbursed an additional 6 cents for each lunch they serve in accordance with the new standards. Since action has been taken by the federal government to enhance school meals with healthier options, schools should strongly enforce and apply these changes in their systems. With the guidelines that First Lady Michelle Obama initiated, the state can give extra funding for those schools that meet the nutritional guidelines under the Healthy, Hunger-Free Kids Act of 2010. A proposal to help schools with this problem would be to make the healthy foods more available and appealing to the students. This brings up the idea of food access in lunchrooms. For example, all the fresh

fruits, vegetables, and whole grain foods should be placed in a separate line so that kids are not even tempted to reach out for the junk food while purchasing meals.

The United States Department of Agriculture put together a program for children's nutritional education called "Choose My Plate". This program gives children a visual perspective on how to choose their foods wisely. They currently have an initiative called "MyPlate on campus " on their website to help spread awareness of the program on college campuses. This initiative can be served as an example for the state of Michigan to make it required for all schools to use this initiative in the lunchrooms. Engaging students in this activity at a young age will help them carry on their healthy eating habits in the future. A good proposal for placing Choose My Plate in school systems would be to purchase reusable plastic MyPlates in each lunchroom. These plates will be available to all children and will already be labeled with what the child should eat. This will make it easier for the children to choose their adequate intake of fruits, vegetables, protein and fat.

Unhealthy competitive school foods that are offered in the á la carte lines or vending machines can work against a school's effort to improve the diet of its students. This can happen because of insufficient funds or insufficient space within a lunchroom. Case studies that was done by Lucarelli et al. (2013), looked at eight low income Michigan middle schools and the school lunch environment, and found that there are various characteristics which can come as barriers for schools and families while trying to implement a healthy lifestyle for students.

There are multiple techniques that can be applied by schools to have drastic changes. For example, Professors from Cornell are taking a creative approach to remodeling lunch lines. Simple placement strategies of the healthy food options increased fruit consumption by 18% and increased vegetable consumption by 25% (Hanks, Just, & Wansink, 2013) Figure 2 shows a portion of the changes that can be implemented in lunch lines. Having the student's interest in these programs will encourage institutions to provide more food options in the school lunch programs and more learning opportunities in school curriculum.

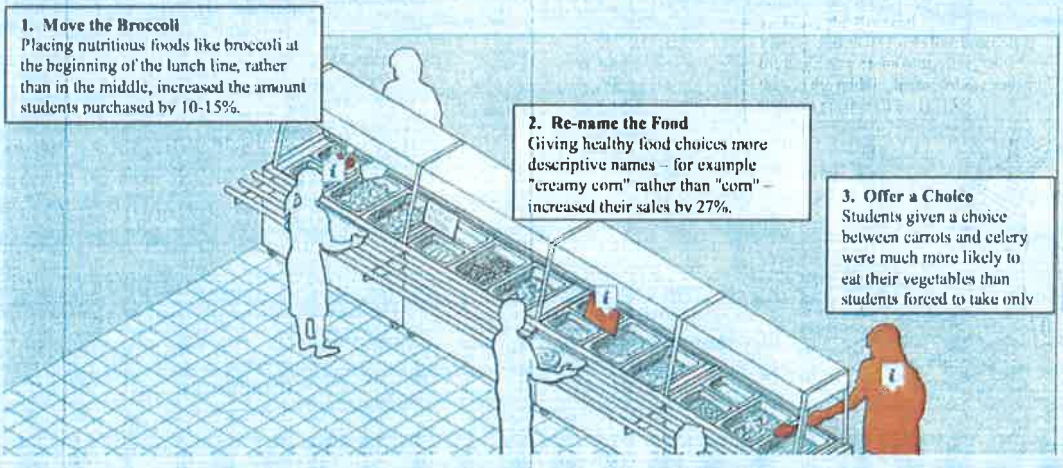

Figure 2. Redesigning the lunch line. Retrieved from http://www.extension.umn.edu/family/health-and-nutrition/school-foodservice-training-and-resources/great-trays/docs/redesign-lunch-line.pdf.

Food Access

Another risk factor that contributes to childhood obesity is the lack of proper food access. This is a primary concern especially among low-income communities. Studies show that 45 percent of overweight and obese children aged 10-17 come from low-income families (Childrens Defense Fund, 2012). A main reason for this is the lack of adequate access to food markets and grocery stores. Most low-income families live within urban areas where grocery stores and farmers markets are scarce. These communities where access to nutritious, and affordable foods is limited are referred to as "food deserts" (Ploeg et al, 2009). Recently, a study was conducted in the city of Detroit by the Mari Gallagher Research and Consulting group to analyze the impact food deserts had on public health. The study found that more than half of the city's population had to travel twice as much time to reach a food market than they needed to reach a convenient or fast food restaurant (Gallagher, 2007). These 'food deserts' should be eliminated and more food markets and grocery stores should be added throughout the city. The study also found that instead of acquiring ingredients required for a balanced and healthy diet, parents were shopping at "fringe" stores such as gas stations, liquor stores, and convenience stores and buying overly processed and unhealthy foods. If families were given access to grocery stores and food markets, they would be more likely to choose to buy fresh produce. This would discourage them from eating at fast food restaurants and from buying foods that are high in fat and low in nutrition. The sale of locally grown goods should also encourage within the state. Incentives such as tax breaks should be given to farmers and storeowners to encourage the production and sale of locally grown goods. This would not only help lower obesity rates, but also stimulate the economy by increasing the number of jobs available.

Child obesity rates can be controlled by making changes to the Supplemental Nutrition Assistance Program (SNAP), more commonly known as Food stamps. According to the USDA, in October of 2013, nearly 1.8 million Michigan residents, including 80,500 children rely on Food stamps (USDA, 2014). The use of Food stamps to buy nutritious foods should be encouraged throughout the state. Since fresh foods are generally more expensive, families tend to forgo the expensive but healthy foods and settle for the cheaper unhealthy options. Thus, reward programs such as the "Double up Food Bucks" should be re-implemented and encouraged throughout the state. The "Double up Food Bucks" reward program encouraged families to buy healthy groceries using their food stamps by awarding them with double reward tokens that could be used to purchase additional groceries. The state saw an increase in fresh foods sale from $2,500 in August-September, 2009, to $12,300 in August-September of 2010 (Fair Food Network, 2012). This program not only benefited the customers, but also the local farmers and store owners. Thus, similar incentive programs should be re-implemented and introduced throughout the state of Michigan.

Opposition

It is simple to indicate that schools need to establish programs to improve the health of children but we must also acknowledge the burdens that come with implementing such programs. It is important to note that this proposal is based on suggestions that the state of Michigan, parents, and educators can take to decrease the rates of obesity among children. However, we know that not every parent or educator can take these steps promptly to ensure that

obesity rates can go down due to financial burdens, access to resources, and past lifestyle behaviors.

Recent obesity trends show that Michigan's obesity has decreased approximately two percent since 2007. This trend indicates that the efforts of the state and the residents of Michigan are going in a positive direction. Figure 3 shows the decrease of overweight students from 9th through 12th grade. The recommendations in this proposal will only increase the rate at which Michigan's obesity rates will decrease.

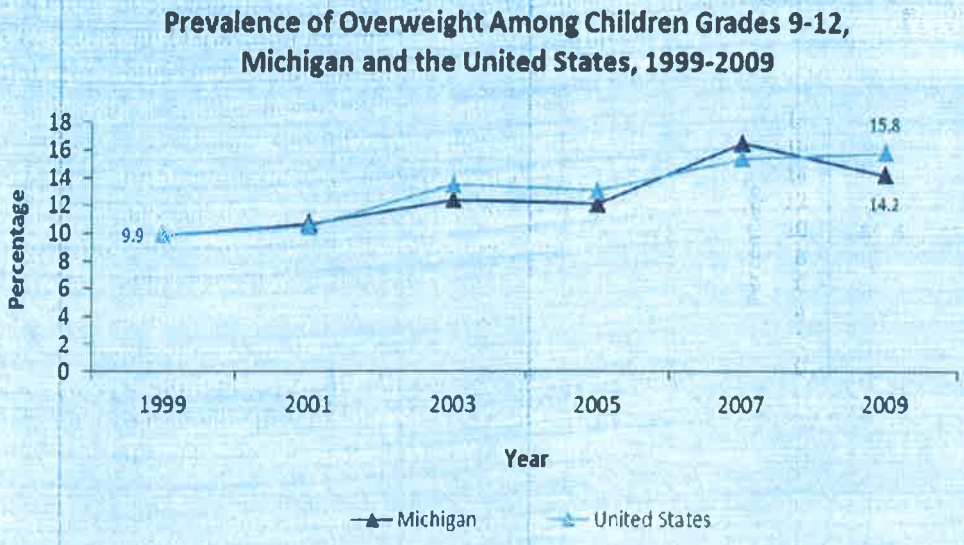

Figure 3. Prevalence of overweight among children grades 9-12, Michigan and the United States, 1999-2009. Adapted from "Michigan Critical Health Indicators 2011", a report done by the Michigan Department of Community Health.

Conclusion

Childhood obesity is a major issue not just within the state of Michigan, but throughout the United States. Schools can use resources such as MyPlate and Health School Action Tools self-assessment to formulate and implement effective and healthy lunch programs. Another important factor that should be addressed is physical activity. Children need 60 minutes of aerobic, bone strength, and muscle strengthening exercise at least three days a week. Using programs such as "Let's Move," would encourage children to exercise and be fit. Another key problem that should be resolved is challenges with food access. Several families live too far away from a grocery store or food market and thus lack access to healthy fresh produce. This can be battled by opening more food markets and grocery stores, which would increase the job opportunities. Additionally, the use of food stamps to buy healthier foods such as fruits and vegetables should be encouraged by offering bonuses such as the tokens given in "Double up Food Bucks." By making these changes, Michigan can effectively manage childhood obesity within the state and serve as an example for the whole nation. Together, we can ensure that

Michigan can set a strong and healthy example for the United States is a healthy and strong nation poised among the best in the entire world.

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