Reach, Teach & Involve: Tackling Childhood Obesity

Executive Summary

Background

The increasing obesity rates in America have caused the nation to declare obesity, particularly among children, a national epidemic. Each year the obesity rates continue to rise and consequently the nation’s spending on related health costs continue to increase. The concerns related to obesity have led to numerous prevention programs popping up across the nation. However, many of these programs are unsuccessful or lack the ability to expand across the country. This report is aimed at providing an analysis of the existing obesity crisis and supplying a recommendation aimed at reversing the trend for increasing obesity rates.

Target Population & Recommendation

To stop the trend of increased rates of obesity, we recommend targeting minority children in low-income neighborhoods. According to the CDC, these children have higher rates of obesity, and therefore are at increased risks for developing chronic diseases. Research has shown that taste and behavioral preferences are most heavily impacted during the early stages of childhood (< 10 years of age). Therefore, children that are surrounded by healthy lifestyle choices (i.e. nutritious foods and exercise) are more likely to maintain these habits throughout their life and into adulthood.

The RTI Project is a nonprofit organization that partners with local research institutions and charter schools in low-income neighborhoods (grades K-8) to immerse students in an unique farm-to-table nutrition and wellness program. RTI will involve students in varying stages of food preparation to create and nurture an appreciation for nutrition and wellness. Students in elementary school will work design, create, and maintain the school garden while middle school students will take culinary classes. The culinary classes will incorporate the fruits and vegetables harvested from the school garden. RTI will also attempt to bridge the educational gap amongst families by providing the students’ families with weekly nutrition and wellness workshops.
Introduction

Obesity rates in America have continued to rise for the past 50 years. The prevalence for obesity in adults is currently 39.8%, which is more than double the obesity rates in the 1970s. (Sandoiu, 2017). Even worse, the obesity rates among children have tripled, skyrocketing from a mere 5% overall in the 1970s to over 18% in 2016 (CDC, 2018). Obesity rates among minorities are even higher, especially in children from low socioeconomic backgrounds.

<table>
<thead>
<tr>
<th>Obesity Rates by Age</th>
<th>Childhood Obesity Rates by Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>Black</td>
</tr>
<tr>
<td>13.9%</td>
<td>22%</td>
</tr>
<tr>
<td>6-11</td>
<td>Hispanic</td>
</tr>
<tr>
<td>18.4%</td>
<td>25.8%</td>
</tr>
<tr>
<td>12-19</td>
<td>White</td>
</tr>
<tr>
<td>20.6%</td>
<td>14.1%</td>
</tr>
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</table>

Source: CDC, 2018

Obesity is linked to chronic diseases such as type two diabetes, cardiovascular disease, and certain cancers, resulting in increased medical costs (Pan, et al. 2016). The United States spends over $149 billion annually on medical costs attributed to obesity and research suggests that without intervention, the costs associated with childhood obesity will eventually transcend more than just medical expenses (Basu & Kim, 2016). Obesity can also cause educational problems including lack of motivation, behavioral issues, disengagement, low grades, and overall poor educational outcomes. This can eventually lead to a less educated society with less earning capacity (Pan, et al. 2016). Therefore, it is imperative that the increasing trend of obesity is disrupted, particularly, among the youth.

Unfortunately, much like weight loss, there is no quick fix to obesity; the solution requires changing the trajectory of the nation’s health with the next generation. The trend for obesity can be disrupted by providing children with necessary tools and guidance to grow into healthier adults. A successful intervention plan should initially target minority children in low-income neighborhoods. The reason for this is two-fold: (1) low-income minorities make up the largest segment of the obese population and (2) if an intervention can be successfully implemented in areas of limited resources then scalability issues should be reduced (CDC, 2018).

Profile and Risk Factors for Childhood Obesity

The main known causes for childhood obesity include: eating high-calorie, low-nutrient foods and beverages, lack of physical activity, prolonged sedentary activities, and poor sleep routines (CDC, 2016). The aforementioned causes may be a result of a variety of risk factors, such as lack of access to nutritious foods and lack of nutrition education. In many cases, these risks are a consequence of low socioeconomic status resulting in a lifestyle that is conducive to developing childhood obesity. (CDC, 2016)

Social and physical environments surrounding children strongly influence their eating patterns (Patrick & Nicklas, 2005). Parents’ socioeconomic status, education, lifestyle, and ethnicity may have a significant effect on the type and quantity of foods their children eat.
Families with low incomes tend to choose high-energy, low-cost foods, which are usually unhealthy. These families may be limited to lettuce, potatoes, canned goods, and bananas due to the high cost of fresh produce (Drewnowski & Eichelsdoerfer, 2010). Therefore, low-income families may consume more unhealthy foods, such as fast food and processed foods, simply because they are cheaper and more accessible. Consequently, children are exposed to unhealthy diets at a young age and their tastes become accustomed to those flavors, leading to bad eating habits as they grow older (Birch & Fisher, 1998).

Borrowing From What Works

Educational research shows that both hard and soft skills are impacted and imprinted the most during early stages of life (<10 years old); this includes food addiction and dietary behaviors. Therefore, it is possible to combat poor eating habits by providing children with nutritious food and health education at young ages. Many schools in the U.S. encompass a variety of initiatives and policies to promote healthy eating and physical activity (Langford, 2015). The strongest policies are found in those districts with the greatest number of students that are eligible for free or reduced-price lunch; these (K-12) education systems utilize school food and physical activity environments and policies, school body mass index measurements, and school wellness policies to promote healthy eating and physical activity among the students (Story, 2009). Successful health initiatives also tailor programs to individual schools’ needs, align interventions with schools’ core aims, work with teachers to develop programs, and provide ongoing training and support to students and their families (Langford, 2015; Story, 2009).

Some countries, such as Australia and South Africa, have found some success in establishing a “Health Promoting School” (HPS). The World Health Organization describes a Health Promoting School (HPS) as, “one that constantly strengthens its capacity as a healthy setting for living, learning and working” (World Health Organization, 2018). HPS implements changes in their core policies and procedures, and emphasize “partnerships between researchers, schools and families” to establish methods for improving nutrition and fitness, both of which are determinants for obesity (Langford, 2015). Although HPS have found success in several countries, one major challenge that they face is establishing and maintaining the aforementioned partnerships (Nader, 2000). The partnerships are completely up to each school to find, establish, and maintain. This challenge has led to many of these HPS failing to reach their full potential (Langford, 2015).

Another initiative that has found some success in improving students’ nutrition, is CalRecycle’s Education and Environment Initiative. A main component of this initiative is children creating and maintaining a school garden to teach students early on about fruits and vegetables (CalRecyle, 2018). The gardens work to combat California’s obesity epidemic by providing students (K-8) with an interactive learning experience. The students receive nutrition education through the experience of working the garden and get exercise from the wide range of physical activities including digging, planting, raking, and weeding. More importantly, the students are more willing to try fruits and vegetables because of their pride and curiosity about the garden they build and maintain (CSGN 2018). However, the weakness with this initiative is
that it fails to involve families and teach students how to incorporate the fruits and vegetables into their everyday eating habits.

**Recommendation: The RTI Project**

The RTI Project: An initiative aimed at Reaching, Teaching, and Involving students in nutrition and physical education through a unique farm-to-table program. The RTI Project will take principles from HPS and California’s EEI and combine them to create an interactive educational partnership with charter schools in low-income neighborhoods to target children (and their families) in grades K-8 (when children are receptive to change) with the aim of helping establish healthy nutrition and fitness habits. Students will assist in the meal preparation in varying degrees depending on age to receive a complete understanding of the importance of nutrition and health.

**Partnering with Charter Schools**

Charter schools are independently run public schools that receive greater operational flexibility than traditional public schools. These schools are established by “a charter,” or a contract describing the school’s mission, program, personnel, finance, etc. More specifically, charter schools focus on performance accountability and therefore establish how all aspects of the charter (contract) are measured (National Charter School Resource Center, 2018).

In America, charter schools typically have similar demographics to traditional public schools. However, in many states, including Texas, the charter school network often encompasses a higher percentage of low income and Black and Hispanic children than traditional public schools. The National Alliance for Public Charter Schools (NACPS) states that public charter schools across the nation enroll “a greater percentage of low-income students (46% versus 41%), Black and Hispanic students (27% versus 15% and 26% versus 22%, respectively)” (NACPS, 2017). In some areas, these disparities are even higher, for instance in San Antonio many charter schools are comprised of over 80% of minorities.

**School Engagement**

The RTI Project will help each school design, develop, and maintain an edible school garden. A master gardener will work with each school to design a garden that is tailored to the school’s resources and needs. For instance, smaller schools with less property can utilize raised garden beds. RTI will partner with a consulting firm to create an online interactive training workshop to provide teachers and the administration with knowledge on how to incorporate learning into gardening activities. All students, grades K-5, will have the opportunity to assist in the maintenance and development of the garden. Students will help decide which fruits and vegetables to grow, create garden signs, plant the seeds, harvest the fruits and vegetables, and even clean and prepare them for meals.

The aforementioned activities will be adapted for varying grade levels. Students in grade levels K-2 will work on activities such planting the seeds, watering the garden, and designing the garden signs. The students in grade levels 3-5 will also have the opportunity to work in the garden, harvest the fruits and vegetables, and clean and prepare the fruits and vegetables.
While the elementary students tend to the garden, middle school students, grade levels 6-8, will work on basic culinary skills. The school will replace one of the student’s elective class periods with the RTI class where the students will work on skills such as baking, cuisine, and food preservation. During these periods, the teacher will guide the students in a cooking class in which the students will assist in producing a meal that will utilize the fruits and vegetables grown from the school garden. These dishes will be incorporated in the school breakfast and lunch meals. Students will then be provided with recipes to take home to their families so that they may incorporate what they learned in school into their homes.

After-school Workshops
Students’ family backgrounds have a large impact on how students handle nutrition and wellness outside of school. Thus, RTI Project will get families involved by incorporating family workshops into after-school programs. Once a week, RTI will offer a weekly curriculum for children and their families. The weekly sessions will cover various topics regarding nutrition and physical activity. RTI representatives will lead a nutrition & wellness workshop that will also include a nutritious dinner for the family. This initiative will allow families to receive a free meal while simultaneously equipping them with necessary tools and information to reinforce the healthy lifestyle habits the children are learning in school. Additionally, families will be given resources that will detail where they can find low-cost fruits and vegetables and other ingredients to make the same meals at home.

Implementation of Pilot Project
The RTI Project will be implemented in 3 major phases over the next 10 years. In phase 1 RTI will be implemented in the San Antonio Independent School District in two major charter schools in the area. These charter schools serve grades K-8, and over 2000 students combined. This area was chosen because it has both a high minority (Hispanic and Black) population and is a low-income neighborhood. Specifically, the population consists of 74% Hispanics, 16% Blacks, and 9% Whites; the median household income is $34,889 (City-Data, 2018).

Low income minorities account for a large percentage of the obese population in America. After one year, RTI will implement the RTI Project at two additional charter schools in the area. During the following 3 years, RTI will review, evaluate, and refine the program while preparing to scale the project into the rest of San Antonio. By year 10, the RTI project will expand the program into 10 additional schools in low-income neighborhoods across the state.

Financial Analysis
Cost of RTI
The RTI Project is estimated to cost $ 2.5 million in its initial phase. This amount includes overhead such as acquiring and furnishing office space, salaries and benefits, development of online training course, equipment, garden tools, and food costs. Phase 2 will cost approximately $1.8 million; this figure accounts for recurring administrative expenses, increased food costs, and the construction of gardens at each new school. RTI will need approximately $150,000 to implement its program at each new school. Therefore, in the final phase, the project will need approximately $1.5 million in funding to cover the expansion of RTI into the 10 additional schools. The total cost for the RTI Project is approximately $17.8 million, this will cover implementation of the program in 14 schools serving over 140,000 children over 10 years.
Funding for RTI

RTI will receive funding through various sources, including:

○ Charter School Partnership: charter schools currently receive federal funding for schools that meet the federal nutrition guidelines set forth by the USDA. Additionally, Texas charter schools were granted state funding in 2017. We would contract for 70% of the schools’ food and nutrition budget totaling approximately $475,600 per school/annually (subject to change depending upon student enrollment at each school).

○ RTI Online Interactive Workshop Fee: Schools, including non-participating schools, can sign up for the online courses costing $5,000 per school.

○ Partnership with Texas Biomedical Research Institute allocated a $3 million grant to fund research on obesity. By partnering with TBRI, we can receive a portion of the grant as part of the RTI project.

○ Grants from various nonprofit foundations aimed at childhood obesity and school gardens. (see exhibit 2)

Metrics and Research Institute Involvement

 RTI will partner with Texas Biomedical Research Institute. TBRI will play a key role in assessing the success of the RTI project. Metrics acquired from studies will be twofold: health and education. The “health” portion of research will include metrics that track health performance such as obesity rates, and fitness. The “education” portion of research will include metrics that track educational performance such as test scores, attendance, and class engagement. TBRI will track the student’s metrics (weight, BMI, etc.) upon entrance into the program and at the end of their 8th grade year. Furthermore, TBRI will acquire any necessary additional data, tracking improvements, and comparisons with other traditional schools, and determining the indicators of success such as lower obesity rates.

Due to the TBRI partnership, key performance indicators of RTI project will be published and is expected to show increased health outcomes as well as increased educational performance compared to similar non-participating charter schools. These success factors will allow RTI to seek more funding and expand into new cities across the United States. Additionally, successful implementation of RTI can lead the adoption of the program, or segments from the program, into public schools.

Organization structure

The RTI Project will be set up as a regional 501(c)3 non-profit organization with a traditional Board of Directors comprised of key stakeholders and local influential leaders in the community. RTI will hire essential staff to include: an executive director, CFO, chef, nutritionist, gardener, attorney, public relations specialist, public health specialist, and staff (see exhibit 1).

RTI Project will also establish a partnership with Texas Biomedical Research Institute (TBRI). TBRI is an institute in San Antonio that is currently conducting research on childhood obesity. Thus, they may be interested in partnering with RTI to collect data on how this program affects the health of students at the schools being engaged. This partnership will provide RTI
with the resources to successfully track the necessary metrics regarding the student’s health and weight.

**Potential Challenges**

There are several potential barriers to successful implementation of the RTI Project, encompassing 3 main categories: safety, support, and culture. Safety challenges involve risks of mishandling gardening equipment, food allergies, and food safety. These can be mediated through proper training of RTI staff and educating the children on safety measures. Support challenges include: lack of resources/motivation from parents, lack of school resources (some charter schools lack full kitchens), and lack of interest from children. Many of these can be overcome through education, training, and incentives. Finally, differences in culture may affect the way children are taught to view food, health, and exercise. This can be overcome through proper research into the demographics of the communities served. Thus, the belief is that despite the challenges to implementation RTI will be able to successfully initiate its program in charter schools across Texas, and eventually expand across the nation.

**Conclusion**

In 2018, the United States was the 12th most obese country in the world, with nearly 78 million adults and 13 million children dealing with the health and emotional effects of obesity every day. Without intervention these numbers are expected to continue to rise. Implementing the RTI Project with charter schools in communities that have the highest risk for obesity will create a new cycle for healthier lifestyles amongst these groups.

RTI Project will tackle key issues in these communities by teaching and reinforcing healthier lifestyles choices in children at young ages. It will provide students and their families with the necessary tools to incorporate the learned practices at home. Thus, the healthy practices can be incorporated into all aspects of the children’s lives and not just at school.
Appendix:

Exhibit 1

<table>
<thead>
<tr>
<th>Title</th>
<th>Salary</th>
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<tbody>
<tr>
<td>Executive Director</td>
<td>$104,700</td>
</tr>
<tr>
<td>CFO</td>
<td>$96,080</td>
</tr>
<tr>
<td>Head chef</td>
<td>$45,000</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>$55,000</td>
</tr>
<tr>
<td>Master Gardener</td>
<td>$25,030</td>
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<tr>
<td>Public Relations Specialist</td>
<td>$59,300</td>
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<tr>
<td>Public Health Specialist</td>
<td>$45,360</td>
</tr>
<tr>
<td>Attorney</td>
<td>$76,734</td>
</tr>
<tr>
<td>RTI Staff</td>
<td>$29,880 (each)</td>
</tr>
</tbody>
</table>

Additional 20% for benefits  
Source: BLS

Exhibit 2

<table>
<thead>
<tr>
<th>Grant</th>
<th>Description</th>
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<tbody>
<tr>
<td>Nature Works Everywhere</td>
<td>This foundation provides grants to schools and organizations across the nation that utilize edible gardens in schools to teach nutrition. The program provides $2,000 for the startup costs for each public/charter schools gardens.</td>
</tr>
<tr>
<td>Robert Wood Johnson Foundation</td>
<td>This is a foundation that funds programs which enable people to live healthier lives. Specifically, one of their focuses is “Healthy Children, Healthy Weight,” which aims to enable all children to attain their optimal physical, social, and emotional well-being, including growing up at a healthy weight.</td>
</tr>
<tr>
<td>Oliver Foundation</td>
<td>This foundation is dedicated to the prevention of childhood obesity and awards several grants every year to programs with that focus.</td>
</tr>
</tbody>
</table>
References

3. National alliance for public charter schools


22. National Alliance for Public Charter Schools

23. World Health Organization

