2014

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SUMMER PHYSICAL ACTIVITY LOG AND REWARD SYSTEM FOR CHILDREN IN COLCHESTER, VERMONT

Bryce Edwards
Family Medicine April, 2014
With Fletcher Allen Pediatric Outreach Program, Burnham Memorial Library, and Alicia Jacobs MD
Childhood obesity has doubled in children and quadrupled in adolescents in the past 30 years.

As of 2012, over 1/3 of children and adolescents in the United States are overweight or obese.

A study from the CDC estimates that 1 in 3 children born in the year 2000 will develop diabetes in their lifetime.

Obese children are at an increased risk for developing cardiovascular disease, diabetes and pre-diabetes, joint problems, sleep apnea, as well as social and psychological problems stemming from stigmatization and poor self-esteem. Overweight and obesity are also risk factors for multiple types of cancers.

Overweight and obese teens have less friends than their normal weight peers. They also suffer from higher rates of depression and suicide if they are being teased by about their weight.
In Vermont:

- 1 in 4 youths in grades 8-12 are overweight or are at risk for being overweight

According to the 2013 Vermont Youth Risk Behavior Survey, an average of 14.25% of high school students in Colchester are overweight (BMI 85-95th Percentile). In addition, 19% of 6th graders, 21% of 7th graders, and 33% of 8th graders describe themselves as slightly or very overweight.

- 33% of sixth graders, 34% of 7th graders, and 48% of 8th graders report that they are trying to lose weight.

- Half of overweight children in grades 8-12 watch over 3 hours of television per day

- Only 24% of high school seniors took part in at least one physical education class per week during the school year.

- School based programs have been shown to be effective at promoting physical activity and fitness, as well as improving health in kids and adolescents. However, there is significantly less structure and support for maintaining physical activity and health during summer vacation.
Between 1979 and 1999 hospital costs for obesity related issues in children and adolescents has increased from $35 million dollars to $127 million dollars per year.

Health care premiums for families have risen 100% from 2001 to 2006, and it has been estimated that a quarter of this increase in cost can be attributed to obesity.

Poor diet and physical inactivity is the second leading cause of death in the United States.

$98 to $129 billion dollars was spent in the United States on healthcare costs related to obesity. Over 50% of these expenses were paid for by Medicare and Medicaid.

If the childhood obesity epidemic continues, complications related to type 2 diabetes, such as blindness, stroke, CAD, amputation, and renal failure, will become common in middle aged people.

A study in 2003 determined that obesity related medical costs in Vermont totaled $141 million. With per Capita costs relating to obesity reaching $228 per person and Medicaid funded obesity related medical costs at $40 million.

Around 75% of obese children will also be obese as adults, putting them at greater risk for all of the aforementioned conditions, as well as coronary artery disease, sleep apnea, joint pain, and stigmatization.
During interviews, two community members working in the field of health and wellness have demonstrated support for a summer physical activity intervention program and addressed the need for such a program.

Amy McCrae, Health Coach at Colchester Family Practice: “The schools do a nice job promoting health with lunchtime meals and some physical education classes, but there is no structure during the summertime. With kids in Colchester, if they are not participating in sports through the school and are not involved in a rec program, they tend to fall by the wayside and are not getting much activity. The way the town is set up, it is hard for kids to get around unless they are in cars so it is not an ideal setting for them to be active.”

Kristin Fontaine, Pediatric Outreach Coordinator for Community Health Improvement at Fletcher Allen Health Care: “If you look at the statistics for Colchester and for all of the state of Vermont, it can be alarming to see where we are in terms of physical inactivity and obesity. I think a summer program encouraging kids to stay active would be great and it would help kids build physical activity into their daily routine. I think an incentive log and a list of ideas of things that kids can do to stay active would be a good way to address this problem.”
Throughout my clerkship at Colchester Family Practice I began to appreciate just how much physical inactivity and obesity contributed to medical complications and illness in the community, both in the adult and pediatric populations.

As someone who has had a lifelong passion for sports, the outdoors, and exercise, I realized that I could make the biggest impact in the community by promoting and encouraging physical activity among the youth population in this area.

Incentive reward programs have been shown to be effective at promoting healthy behavior change, and improving the use of preventive services especially in lower income populations.

For years, libraries have used reading logs and conditional reward systems. In these programs, kids keep track of the amount of time spent reading throughout the summer months and are rewarded based on meeting certain goals set before they began reading.

Hannah Peacock, Youth Services Librarian and Assistant Library Director of the Burnham Memorial Library in Colchester, VT, explained that these programs have been effective in increasing reading participation in kids of all ability levels in the community.
For this summer, I created a physical activity log, similar in structure to that of a summer reading log. Children can record the amount of time they spent exercising each day, what activities they participated in that day, and they can also record the amount of screen time they engaged in on each day. This is important as screen time is a major factor contributing to physical inactivity in youths.

At the end of the log there is also an extensive list taken from the US Air Force website, with different activities that children and families can participate in as well as the relative intensity of each activity. This is helpful because kids may not know what qualifies as physical activity in some instances and it is also nice because it provides a variety of ideas for activities to help prevent repetetiveness and boredom.

The CDC recommends that children participate in 60 minutes of physical activity per day and limit their amount of screen time to 2 hours per day. All Kids who accomplish their activity goal will be eligible for a reward at summers end. Those who accomplish the screen time goal will be able to put their name into a raffle to be eligible to earn another award at the end of summer.

Dr. Alicia Jacobs who operates a wellness stand at the Burlington farmers market agreed to hand out the log to children and families attending the market this summer. They can hand in their logs at the end of summer at this same stand.

Hannah peacock of the Burnham Memorial Library in Colchester has also offered to hand out copies of the log along with their summer reading logs and collect both at the end of the summer.
One way to measure the response of this intervention will be to determine how many physical activity logs are dispersed throughout the summer both at the farmers market and at the library in Colchester.

It will also be important to measure how many of those children return the logs at the end of the summer.

Of the children who participate in the program, we will measure how many children accomplish their physical activity and screen time goals.

There will also be a brief survey at the end of each log to get a feel for how effective kids and/or parents perceived the intervention to be.

Participants will have an opportunity to provide feedback about what they did and didn’t like and for ways to improve the intervention in the future.
The main measurement of the effectiveness of this intervention will be to determine how many people sign up for the program, and of those, how many continue to participate for the entire summer.

The feedback provided by participants or their parents will be important to evaluate which aspects of the program were effective and which need to be improved.

Limitations include a lack of monitoring children who are participating. It is also going to be difficult and somewhat tedious for kids to keep track and write down the amount of physical activity and amount of screen time they are engaging in. One way to address this issue is to have kids bring their logs back to be checked each week and those who have met their goal each week can put their name every week into a prize raffle to increase their odds of earning a reward at the end of the season.

In addition to these limitations, it could be difficult to find adequate resources that will allow us to provide sufficient rewards that will motivate kids to participate for the full 3 months of summer.
There are several ways to improve this program moving forward. Reaching out to local businesses for potential sponsorship of the program would be beneficial as it would provide a means of maintaining rewards and incentives that are sufficient to keep children interested.

The Community Health Improvement department at Fletcher Allen has expressed interest in putting together a starter package for kids when they sign up. This could include items such as a stopwatch, jump rope, water bottle, etc. Which would provide tools for kids to get active and a means to measure the amount of time spent on activity on a given day.

Individualizing each log and activity program is going to be an important step moving forward. Giving kids an opportunity to express their own goals based on their own level of fitness and ability. This will be helpful for those who are not as active at baseline and will provide positive feedback and encouragement for kids who maybe cannot meet the recommended amount of exercise and screen time initially.

Aside from enrolling kids at the library in Colchester and the farmers market in Burlington, it will be important to involve libraries in other communities. Handing out logs through the community health teams at different family practices and Medical Homes throughout Vermont is another good way to increase awareness and recruit participants. Involving community health teams will be important because it will be a great way to have a health and wellness professional present when participants are turning in their logs to answer questions and provide insight as to how to best accomplish their goals.
9 References


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- [http://www.usaflivingfit.com/list-of-activities](http://www.usaflivingfit.com/list-of-activities)
