

## **EXECUTIVE SUMMARY**

### **PROGRAMS DESIGNED TO REDUCE OBESITY AND CHRONIC DISEASE AMONG CHILDREN BY INCREASING ACCESS TO NUTRITION AND PHYSICAL ACTIVITY A Review of the Literature**

**Skagit County Healthy Communities Project  
Advisory Leadership Team  
March 2010**

Prepared by:  
Westra Research Center  
Beth L.W. Baeslack  
Karen L. Westra, Ph.D.

On behalf of:  
Skagit County Healthy Communities Project  
Liz McNett Crowl, Coordinator  
Skagit Valley Hospital

The Skagit County Healthy Communities Project (SCHCP) aims to reduce and prevent obesity and chronic disease by increasing access to healthy nutrition and physical activity. The SCHCP Advisory Leadership Team held three summits inviting educators, healthcare professionals, and community members to brainstorm a list of strategies and priorities for addressing the issue of chronic disease and obesity among children. A literature review was performed to help inform the “next steps” in addressing these issues. The literature review was a systematic exploration of strategies suggested by the summit participants. Under each heading, a search was conducted to determine if existing programs/strategies have been developed in other communities and have been found to be successful.

#### **Increase Physical Activity at School**

One of the strategies suggested at the summits was to increase physical activity in schools. A strong association has been documented between the level of physical activity and overweight and obesity<sup>i</sup>. It has been much more challenging to document a cause and effect relationship. A meta-analysis of 18 previous studies found that “Variation in the duration, intensity and structure of school-based physical activity interventions had minimal effects on short-term or long-term BMI (Body Mass Index) change<sup>ii</sup>.” Considering the association between reduced physical activity and obesity, these findings are perplexing. The meta-analysis suggests that other variables may have a more substantial causal link to obesity, namely nutrition. However, physical activity, regardless of its effect on BMI, may have other significant health benefits, such as decreasing chronic disease.

A relationship between obesity, poor nutrition, inactivity and increased risk of chronic disease in adults is documented in the literature<sup>iii</sup>. An emerging body of evidence is beginning to show an increase of risk factors sooner in life. However, none of the studies cited in this review were of sufficient magnitude to include chronic disease as an outcome measure.

Efforts have been made to improve or change physical activity (PE) curricula. According to the Center for Disease Control and Prevention (CDC), increasing the amount of physical

activity in school-based PE classes has been found to be an effective way to increase physical activity among children<sup>iv</sup>. SPARK and CATCH, two programs, which aim to increase time spent being active and playing physically, were cited as programs that demonstrated success in increasing activity during PE classes.

In summary, while children receive several benefits from exercise, it is possible that physical activity alone may not be enough to impact BMI. Findings suggest that exercise adds to the effect of diet, making it a valuable tool in addressing childhood obesity. In-school nutrition plus exercise programs have shown some promise toward the goal of effecting positive change.

### **Increase Nutrition at School**

Another strategy suggested by summit participants was to improve nutrition within schools. The National School Lunch Program (NSLP), established upon the passage of the 1946 National School Lunch Act, is a tool used today to address dietary concerns of American children in public schools. While most schools have improved the nutritional quality of these lunches with respect to key nutrients, the lunches are lacking in fruits, vegetables and whole grains<sup>v</sup>. They have also been found to be too high in saturated fat and sodium.

There is substantial evidence suggesting that one of the major obstacles to providing nutritious options for children is the accessibility of low-nutrient, energy-dense foods that are available as “extras” in the lunchroom (not included in NSLP). These foods are generally found in vending machines and as a-la-carte options in the cafeteria, and are also referred to as “competitive foods.” The availability of such foods was found to be associated with higher BMI scores<sup>vi</sup>. Research shows that sugar-sweetened beverages also have a negative impact on overall health, including a less healthy diet, dental decay, and anxiety<sup>vii</sup>.

Several programs have been successful in increasing the consumption of fruits and vegetables. This includes efforts to make fruits and vegetables more available or affordable<sup>viii</sup>.

While the meta-analysis performed by the BC Children’s Hospital showed that school-based physical activity interventions alone did not improve BMI, it found that interventions that include a nutrition component showed more promise<sup>ix</sup>. Efforts to promote both nutrition and exercise in the school setting have led to several evidence-based interventions. One such intervention is the Coordinated Approach to Child Health, or CATCH program. The CATCH program focuses on both increasing physical activity and improving healthy eating. Research on the CATCH program has been able to document both dietary improvement and increased physical activity among its participants, even after three years. One CATCH program in a Hispanic community in El Paso, Texas was successful in stemming the rate of increase in overweight among its participants<sup>x</sup>. At least one after school program, also incorporating both physical activity and nutrition components, documented improvement in body fat percentage when the students participated in at least 40% of the sessions<sup>xi</sup>.

### **Promote Access to Low or No-Cost Healthy Food in the Community**

Summit participants suggested promoting access to low or no-cost healthy food in the community. There is evidence that a reduction in the cost of healthier foods such as fruits and vegetables leads to an increase in the purchase of those foods. Studies have documented that a reduction in cost or the distribution of vouchers led to an increase in the sale of fruits and carrots in a high-school cafeteria, an increase in the purchasing of healthier snacks in vending machines in schools, and an increase in the purchase of fresh produce by WIC recipients<sup>xii</sup>.

A study published in the *American Journal of Preventative Medicine*<sup>xiii</sup> found a positive association between nearby supermarkets and healthy eating behaviors. Supermarkets tend to

have a greater selection of healthy foods at lower-costs than smaller stores in low-income, minority, and rural communities.

Studies have been conducted to test the hypothesis that if more unhealthy food options are available to children in their community, children are more likely to choose an unhealthy option. A study published in the *American Journal of Public Health*<sup>xiv</sup> found that students with fast food restaurants within a half-mile of their schools consumed fewer fruits and vegetables, consumed more servings of soda, and were more likely to be overweight than those who did not have fast food restaurants available in the same proximity.

### **Education and “How To” Materials**

Participants suggested the development and dissemination of educational and “how to” materials. While health related pamphlets have been found to be effective in changing knowledge and beliefs, they are less effective in changing behaviors<sup>xv</sup>. Pamphlets were more likely to be effective as a supplement to other efforts than as a primary approach.

### **Increase Participation by Health Care Providers**

Summit participants suggested involving health care providers in the fight against childhood obesity. The Robert Wood Johnson Foundation posted a summary of a study published in the *British Medical Journal*<sup>xvi</sup>, which found that “counseling from a primary care physician (PCP) does not aid in weight loss among overweight children or improve their physical activity levels.” While this study concludes that primary care physicians are not sufficient as an intervention strategy for obese/overweight children, it is certainly not a message to discourage physician participation. This simply suggests that primary care physicians should not be the primary or exclusive intervention provided to overweight and obese children. It is also possible that their intervention would have a greater effect when addressing chronic disease.

### **Built Environment**

Finally, participants suggested intentional development of physical spaces that encourage physical activity, or “built environment.” Both neighborhood safety and a favorable social environment have been found to correlate with physical activity and overweight (summarized on the Robert Wood Johnson Foundation’s online “Childhood Obesity Newsroom”)<sup>xvii</sup>. Programs that have attempted to improve the safety of parks, or increase activities offered in those parks have not been able to produce an increase in park use or the physical activity of park users. Studies suggest that an increase in park safety or programming alone is not enough to increase park use.

The CDC’s Recommended Community Strategies report suggests enhancing infrastructure to support bicycling lanes and opportunities for children to walk<sup>xviii</sup>. The report notes that improving opportunities to bike and walk is associated with increased frequency in bicycling and walking (physical activity). The report says that the combination of quality built environment and school location could lead to a significant increase in non-motorized travel to school.

Skagit Valley summit participants suggested seeking community participation in this endeavor, including existing community groups (YMCA, Boys and Girls Clubs, Scouts, etc.) and/or developing new community based exercise programs. These existing community groups can be considered as options for implementing any of the suggested programs or built environment concepts.

## **Summary**

In summary, many factors have been associated with the incidence of overweight, obesity and chronic disease. The outcome literature suggests that the problem is complex and calls for a multi-faceted solution. It suggests that every sphere of influence should examine how it can contribute to the solution and maximize the positive changes within their control. The programs that show the most promise appear to be those that incorporate multiple approaches including both physical activity and nutrition. Therefore, as community members consider which strategies to pursue, they are advised to be aware of what they can and cannot expect from their efforts. They should also be encouraged that they may be one piece of a bigger solution in the effort to decrease chronic disease and obesity.

## Works Cited

- <sup>i</sup> Trost SG.; Kerr LM.; Ward DS, et al. "Physical activity and determinants of physical activity in obese and non-obese children." *Int J Obes Relat Metab Disord* 2001;25:822-9.[Medline]
- <sup>ii</sup> Harris, Kevin C.; Kuramoto, Lisa K.;Schulzer, Michael. et al; "Effect of school-based physical activity interventions on body mass index in children: a meta-analysis." *Canadian Medical Association Journal*. March 31, 2009; 719-26. <http://www.cmaj.ca/cgi/reprint/180/7/719>
- <sup>iii</sup> "Preventing Obesity and Chronic Diseases Through Good Nutrition and Physical Activity." Centers for Disease Control and Prevention. 17 Dec 2009. [http://www.cdc.gov/chronicdisease/resources/publications/fact\\_sheets/obesity.htm](http://www.cdc.gov/chronicdisease/resources/publications/fact_sheets/obesity.htm)
- <sup>iv</sup> Khan, Laura K.; Sobush, Kathleen.; Keener, Dana.; et.el. "Recommended Community Strategies and Measurements to Prevent Obesity in the United States." CDC's MMWR Recommendations and Reports. 3 Dec. 2009. 24 July 2009 / 58 (RRO&); 1-26. [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s\\_cid=rr5807a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s_cid=rr5807a1_e)
- <sup>v</sup> Story, Mary. "The Third School Nutrition Dietary Assessment Study: Findings and Policy Implications for Improving the Health of US Children" *Journal of the American Dietetic Association*. Volume 109, Issue 2, Supplement, Pages S7-S13 (February 2009).
- <sup>vi</sup> Story, Mary. "The Third School Nutrition Dietary Assessment Study: Findings and Policy Implications for Improving the Health of US Children" *Journal of the American Dietetic Association*. Volume 109, Issue 2, Supplement, Pages S7-S13 (February 2009).
- <sup>vii</sup> "The Negative Impact of Sugar-Sweetened Beverages on Children's Health." Healthy Eating Research, Robert Wood Johnson Foundation. November 2009. <http://www.rwjf.org/files/research/20091203herssb.pdf>
- <sup>viii</sup> Khan, Laura K.; Sobush, Kathleen.; Keener, Dana.; et.el. "Recommended Community Strategies and Measurements to Prevent Obesity in the United States." CDC's MMWR Recommendations and Reports. 3 Dec. 2009. 24 July 2009 / 58 (RRO&); 1-26.
- <sup>ix</sup> Harris, Kevin C.; Kuramoto, Lisa K.;Schulzer, Michael. et al; "Effect of school-based physical activity interventions on body mass index in children: a meta-analysis." *Canadian Medical Association Journal*. March 31, 2009; 719-26. <http://www.cmaj.ca/cgi/reprint/180/7/719>
- <sup>x</sup> Franks AL, Kelder SH, Dino GA, Horn KA, Gortmaker SL, Wiecha JL, et al. "School-based programs: lessons learned from CATCH, Planet Health, and Not-On-Tobacco." *Prev Chronic Dis*. 2007 Apr. Available from: [http://www.cdc.gov/pcd/issues/2007/apr/06\\_0105.htm](http://www.cdc.gov/pcd/issues/2007/apr/06_0105.htm).
- <sup>xi</sup> "Fresh Fruit and Vegetable Program: Program History." *USDA: Food and Nutrition Service*. <http://www.fns.usda.gov/cnd/ffvp/FFVPHistory.htm>.
- <sup>xii</sup> Khan, Laura K.; Sobush, Kathleen.; Keener, Dana.; et.el. "Recommended Community Strategies and Measurements to Prevent Obesity in the United States." CDC's MMWR Recommendations and Reports. 3 Dec. 2009. 24 July 2009 / 58 (RRO&); 1-26. [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s\\_cid=rr5807a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s_cid=rr5807a1_e)
- <sup>xiii</sup> Larson NI, Story MT, Nelson MC. Neighborhood environments: disparities in access to healthy foods in the U.S. *Am J Prev Med* 2008;36:74--81.
- <sup>xiv</sup> Davis B, Carpenter C. "Study: Proximity of Fast-Food Restaurants to Schools and Adolescent Obesity." *American Journal of Public Health*. 2009 Mar;99(3):505-10. Epub 2008 Dec 23. <http://www.ajph.org/cgi/content/abstract/99/3/505?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&andor exactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&volume=99&firstpage=505&resourcetype=HWCIT>
- <sup>xv</sup> C. L. Paul, S. Redman and R. W. Sanson-Fisher. "Print Material Content and Design: Is it Relevant to Effectiveness?" *Oxford University Press: Health Education Research*. Vol.18 no.2 2003. Theory & Practice Pages 181-190. <http://her.oxfordjournals.org/cgi/reprint/18/2/181>
- <sup>xvi</sup> "Study Suggests Physician Counseling Does Not Curb Childhood Overweight, Obesity." News Digest, Childhood Obesity Newsroom, Childhood Obesity, RWJF. <http://www.rwjf.org/childhoodobesity/digest.jsp?id=22341>
- <sup>xvii</sup> "Report Suggests Unsafe Neighborhood Increases Likelihood of Overweight Among Urban Teens" - News digest Childhood Obesity newsroom - Childhood Obesity - RWJF. <http://www.rwjf.org/childhoodobesity/digest.jsp?id=21781>
- <sup>xviii</sup> Khan, Laura K.; Sobush, Kathleen.; Keener, Dana.; et.el. "Recommended Community Strategies and Measurements to Prevent Obesity in the United States." CDC's MMWR Recommendations and Reports. 3 Dec. 2009. 24 July 2009/58 (RRO&); 1-26. [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s\\_cid=rr5807a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5807a1.htm?s_cid=rr5807a1_e)