CHILDHOOD OBESITY, AN INTERNATIONAL PROBLEM WITH A LOCAL PLAN

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Abstract: Childhood obesity has become a national issue with international concern. Obesity has increased dramatically in economically developed countries and urban areas within the United States. It has become an epidemic. Obesity has become prevalent between different racial/ethnic groups. There are many health risks associated with childhood obesity. Obese children have an increased risk of suffering from obesity in adulthood. Urban areas show an increased prevalence in obese children because they do not have access to fresh and affordable food. The CDC recommends children have 60 min/day of activity. A structured recess program was designed to infuse vigorous to moderate physical activity (VMPA) into recess by providing a fun and age-appropriate VMPA program. The program 30 min/day provided 150 min/wk of VMPA. The program increased the percent of students achieving 150 min/wk of VMPA from 11% to 93-99%. Structured recess has dramatically increased the level of physical activity of the students involved.

Keywords: *Childhood Obesity, Overweight, Kids, Physical Activity*

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INTRODUCTION

The current childhood obesity epidemic has become a worldwide issue. The prevalence of childhood obesity is increasing in industrialized countries as well as several economically challenged countries. The increase has been more dramatic in industrialized countries. In the past 20-30 years, a dramatic increase (double or triple) has been observed in the following countries; Australia, Brazil, Canada, Chile, Finland, Germany, Greece, Japan, Spain, the United Kingdom and the United States (Wang Y., 2006). The highest prevalence of overweight and obesity in children worldwide has been in North America, Europe and parts of the Western Pacific. The lowest prevalence has been seen in parts of South East Asia and sub-Saharan Africa (Lobstein, 2004).

Classifications for childhood overweight and obesity vary within the literature. Body Mass Index (BMI) has been increasingly accepted as a valid measure for children for survey assessment (Dietz, 1998; Lobstein, 2004). There are two international reference systems, the World Health Organization (WHO) and the International Obesity TaskForce (IOFT) (Cole, 2000; WHO, 1995). The IOTF was created because there was concern that the WHO reference was based on US data. The IOTF used an international data collection pool from Brazil, Britain, Hong Kong, Singapore, the Netherlands, and the United States. The IOTF developed definitions of overweight and obesity based on BMI centile curves based on the adult cut-off points of BMI 25 and 30 (Cole, 2000).

Socioeconomic status (SES) and ethnicity can affect overweight and obesity among children. Households of moderate to high SES had an elevated incidence of overweight worldwide (Wang Y., 2006; Wang, 2002). People living in urban settings were more at risk than those living in rural settings. Wang and colleagues (Wang Y., 2006; Wang, 2002) found children with low SES in industrialized countries may be at greatest risk for overweight and obesity. Ethnicity was found to be a determinant of overweight and obesity in British children. Afro-Caribbean and Pakistani girls had an increased risk of being obese. Boys were more likely to be at risk for obesity or overweight if they were of Indian or Pakistani origin (Saxena, 2004).

There has been a dramatic increase in the prevalence of childhood obesity in the United States. Between 1975 and 2006, there has been an increase of 7.4%, 10.5% and 12.6%, in children ages 2 through 5,6 through 11 and 12 through 19, respectively (Ogden CL, Flegal KM, Carroll MD & Johnson CL, 2002; Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR & Flegal KM, 2004; Ogden CL, Carroll MD & Flegal KM, 2008). Additionally, it has been found that, in children 6-11 years old, 22% of Mexican American children were overweight, whereas 20% of African American children and 14% of non-Hispanic white children were overweight (Ogden et al., 2004). Sedentary behaviors in congruence with lack of physical activity are two of the leading contributors of childhood obesity. According to Robinson (2001), 2 - 7-year-old children spend an average of approximately 2.5 hours per day and 8-18 year old children spend an average of about 4.5 hours per day watching television, videotapes and playing video games (screen time). When combined with typical sleep data it was found that children in the United States are spending more than 25% of their waking hours in front of the television screen. Lastly, daily participation in school physical education among adolescents dropped 14 percentage points over the last 13 years, from 42% in 1991 to 28% in 2003 (Lowry, 2002).

Overweight and obesity has increased dramatically in economically developed countries and in urban areas. Within the United States, it has become an epidemic. Discrepancies in incidence of obesity can be noted between different racial/ethnic groups according to the Centers for Disease Control and Prevention (CDC). The health risks associated with childhood obesity include; increased risk for cardiovascular diseases such as high cholesterol and hypertension, greater risk for musculoskeletal issues involving bones and joints, sleep apnea, and social and psychological issues. In addition, overweight and obese children have an increased risk of suffering from obesity during adulthood and dealing with the ramifications of this condition (de Assis MA, 2005; Power, 1997; Serdula, 1993).

The second leading cause of preventable diseases and death in the United States is obesity. Only smoking tops obesity in the U.S. The cost of treating obesity and

the comorbidities associated with obesity reached 117 billion U.S. dollars in the year 2000. Obesity in childhood is particularly concerning as it can influence a child's body and cause secondary chronic diseases. Children can also be affected by the psychosocial consequences of obesity (Power, 1997; U.S. Dept. of Health and Human Services, 2001).

Obesity at any age possesses health risks. In early life, the increased risk occurs because children's bodies are exposed to obesity for longer periods and the psychosocial development has been compromised (Bray, 2004; Must, 1999; Power, 1997).

New Jersey ranks 27th out of the 50 states for its high prevalence of childhood obesity. Obesity rates vary between different races in New Jersey. Urban areas show an increased prevalence in overweight and obese children. Prevalence of overweight and obese children in low-income areas is 35.4% in New Jersey. The NJ Childhood Obesity Study has determined that one reason urban areas have an increase in obesity and at risk for obesity is because these areas do not have access to fresh and affordable food. Urban areas are food deserts lacking options in food and pricing (Ohri-Vachaspati, 2010).

Some of the risk factors associated with the childhood obesity epidemic include the amount of physical activity and time spent on sedentary activities e.g., television/computer activities (screen time). The CDC has recommended children have 60 minutes a day of physical activity (CDC, 2011). According to the National Initiative Children's Healthcare Quality, 64.2% of children in New Jersey participate in vigorous physical activity for 4 or more days a week. However, ten percent of children aged 1-5 spend four or more hours a day in front of the computer/television (NICHQ, 2011).

METHODS

In an effort to affect a change in the incidence of childhood overweight and obesity, a program was designed to increase physical activity in school children. For many, the only outlet for physical activity is during the school day during physical education and recess. However, for the youngest students, many only have physical education one day a week. Recess is an unstructured time and for many children recess may

not provide vigorous to moderate physical activity (VMPA).

The research indicates that lack of physical activity is one of the major contributing factors to the overwhelming increase in childhood obesity, particularly within the 5 municipalities under review in The New Jersey Study for Childhood Obesity. The study analyzed the prevalence and locations of physical activity environments such as parks and specific physical activity centers in each municipality. Areas with the greatest density of parks and physical activity centers are located away from low-income, high traffic, and high crime areas. This suggests there is less physical activity in what may be considered more unsafe areas. Perhaps then it is no wonder why children are spending more time indoors participating in sedentary activities than outdoors getting the recommended levels of physical activity. This also suggests why there is a higher percentage of childhood obesity in children of minority and low-income families, which tend to inhabit these areas. It is therefore recommended that more physical activity be required in a safe and structured school setting. In the Camden Chart Book, 46% of children get 2 or fewer days of physical activity per week in the school setting. If children were exposed to increased physical activity it is possible the prevalence of childhood obesity would decrease.

According to the Rutgers Center for State Health Policy (2010), the percentage of overweight and obese children in the five municipalities in New Jersey ranged from 39.8% to 47.3%. This ranks between 8.1% and an astounding 15.6% higher than the national average of 31.7% as reported in 2007 – 2008 by the National Health and Nutrition Examination Survey (NHANES). Furthermore, the percentage of these children in the obese category ranged from 23.3% - 28.0% in New Jersey and in the very obese category ranged from 17.3% to 21.0%. These numbers are much higher when compared to national averages of 16.9% for obese and 11.9% for very obese. The study also describes childhood obesity by race and gender and compares BMI statistics to national averages. There appears to be an overwhelming trend of increased BMI for non-white minority groups in the state of New Jersey. These numbers are difficult to neglect and much effort has been put forth by The New

Jersey Childhood Obesity Study to identify factors contributing to this inflation. (Ohri-Vachaspati, 2010)

The Center for State Health Policy at Rutgers (2010) has contributed a wealth of information in this matter within the Camden municipality in particular. The Camden Chart Book reports that 58% of children in Camden are not getting the recommended 60 minutes of physical activity most days of the week, and an astonishing 43% of children do not even get 30 minutes of physical activity most days of the week. Instead, these children are spending more and more time participating in sedentary activities such as watching television and playing video games or on the computer. A reported 35% of Camden children spend more than 2 hours per day in front of the television or computer and 68% of Camden children spend greater than 2 hours participating in these same sedentary activities during weekend days. Only 42% of Camden children meet the recommended level of physical activity. (Brownlee, 2010)

The State of New Jersey Department of Education has set forth Comprehensive Health and Physical Education Standards requiring 150 minutes of health, safety, and physical education per week (New Jersey State Department of Education, 2009). Some school districts use recess towards the 150-minute requirement. The State will allow recess to be used as long as the following occurs; activities are taken from the health and physical education curriculum, activities are designed to meet health and physical education core standards, activities are designed and supervised by an appropriately certified teacher, the student-teacher ratio is matched with the accepted district policies, and all students participate (New Jersey State Department of Education, 2010). In a school district where these standards were not being fulfilled, the BEFit program was implemented.

The BEFit Program was designed to utilize the Coordinated Approach To Child Health (CATCH) Program and the State of NJ Model Nutrition Program as an intervention plan. The CATCH Program builds an alliance of children, parents, teachers, and school staff to teach skills and behaviors associated with maintaining healthy lifestyles. It also coordinates four component areas including classroom

curricula, food service modifications, physical education changes, and family enforcement. (Brown, 2007; Coleman, 2005)

CATCH

The BEFit program began with an introduction on the concepts of health and wellness for elementary school teachers, which was administered by YMCA-certified staff. The CATCH program curriculum was then incorporated into classroom activities. The Y-certified fitness instructors mentored the teachers on the CATCH program five days per week. At the conclusion of the school year, the district teachers completed the YMCA University Fitness certification for youth to assess their acquired knowledge.

The BEFit program initiated baseline assessments of the health-related and skill-related components of fitness. The assessments followed the procedures of the FITNESSGRAM, a program designed for institutional testing, and included the following tests; Sit and Reach, Flexed Arm Hang, Curl Ups, and a One-Mile Run (FITNESSGRAM, 2009). The school nurse also recorded height and weight, through which BMI was calculated. The FITNESSGRAM tests and BMI recordings provided a method of evaluating any changes in pre and posttest scores.

During the program, students participated in 30 minutes of structured physical activity during recess four days per week. YMCA certified fitness instructors taught students and teachers various age-appropriate physical fitness activities. The YMCA instructors taught students and teachers what to expect during moderate to vigorous activity, as well as how to measure their own resting, target, and recovery heart rates. Students were also asked to rate their perception of exercise on a 4-point scale while the YMCA instructors and classroom teachers kept a daily log of the students' participation throughout the program.

The CATCH Program was implemented as a format for the physical activities being performed. The BEFit program used the 6-8 year old CATCH age group, which included indoor & outdoor activities such as the human obstacle course, crazy colors, a nature scavenger hunt with pedometers, a walking program, step-dance exercise, and circuit training for 1st and 2nd graders.

In conjunction with physical activities, the students received health and wellness education in their own health class. This education was comprised of the six components of wellness, which include physical, emotional, mental, spiritual, environmental, and occupational wellness. They were also educated on proper nutrition based on the NJ Healthy Choices, Healthy Kids Nutrition Program.

FITNESSGRAM

The FITNESSGRAM is a comprehensive physical fitness assessment tool containing a variety of health related physical fitness tests designed to assess cardiovascular fitness, body composition, muscular strength, muscular endurance, and flexibility. The FITNESSGRAM was designed for use in personal fitness self-testing, personal best testing, institutional testing, parental reporting, and personal tracking. The battery of tests includes the recommendation of six tests with the addition of alternative tests that could be performed in each of the four testing categories (aerobic capacity, body composition, muscular strength and endurance, and flexibility). For aerobic capacity the recommended test is the Progressive Aerobic Cardiovascular Endurance Run (PACER), with two alternative tests, the One-Mile Run or the Walk Test. The recommended test for body composition is the Skin Fold Test with the alternative being Body Mass Index (BMI). There are three tests recommended for muscular strength and endurance; the Curl Up, Trunk Lift, and Push-Up tests, with the Modified Pull-Up and Flexed Arm Hang as two alternative tests. For flexibility the Back-Saver Sit and Reach is recommended with the Shoulder Stretch as an optional test (Meredith, 2007).

CONCLUSION

The structured recess program designed infuses VMPA into recess by providing a certified fitness instructor during recess to implement a fun and age appropriate VMPA program for school children. The program utilized 30 min. (recess) daily for the structured program, providing 150 min/wk of VMPA for the students. The program was able to increase the percent of students achieving 150 min/wk of VMPA from 11% at baseline to 93-99% throughout the school year. This program has dramatically increased the level of physical activity of the students involved. The classroom teachers were trained throughout

the school year by the Y-instructors to be CATCH instructors. The certified CATCH classroom teachers are now able to continue the BEFit program to ensure sustainability for future students.

BIOGRAPHY

Dr. M. Alysia Mastrangelo graduated in Physical Education (Springfield College), in Science of Exercise and Sport (Slippery Rock University), Physical Therapy (Temple University) and Exercise Physiology (PhD – Temple University). Dr. Mastrangelo is an Associate Professor of Physical Therapy at the Richard Stockton College of New Jersey. She is a Fellow of the American College of Sports Medicine. She is a clinically practicing physical therapist in outpatient sports physical therapy and general orthopedics. Dr. Mastrangelo has published extensively in the field of exercise science and sports medicine and presented nationally and internationally. Currently her research on the effect of exercise and physical activity on the childhood obesity epidemic is funded by the U.S. Department of Education.

Dr. Edward C. Chaloupka is a Professor of human anatomy and physiology and exercise physiology in the Department of Health and Exercise Science at Rowan University (New Jersey). He holds bachelor and master's degrees from Queens College of the City University of New York, is a graduate of the physical therapy program at Hahnemann Medical College and Hospital (Philadelphia) and has earned a PhD in exercise physiology from The Ohio State University. Dr. Chaloupka is a Fellow of the American College of Sports Medicine and is widely published in referred journals in exercise physiology and other areas of sports medicine. He has extensively presented his research at state, national and international professional meetings. In addition, Dr. Chaloupka is a clinically practicing physical therapist in the state of New Jersey.

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