CHILDHOOD OBESITY, AN INTERNATIONAL PROBLEM WITH A LOCAL PLAN

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Abstract

Purpose: Childhood obesity has become a national issue with international concerns. 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. The purpose of this study was to implement a structured recess programme. It was designed to infuse 30 min/day of activity into the school day.

Design/methodology/approach: The structured recess programme was designed to include purposeful physical activities. The programme infused vigorous to moderate physical activity (VMPA) into recess by providing fun and age-appropriate activities. The programme consisted of 30 min/day to provide 150 min/wk of VMPA.

Findings: The programme increased the percentage of students achieving 150 min/wk of VMPA from 11% to 93-99% over the course of the school year.

Originality/value: Structured recess dramatically increased the level of physical activity of the students involved. The classroom teachers were trained throughout the school year by certified instructors in the structured recess programme. The certified classroom teachers are now able to continue the programme to ensure sustainability for future students.

Keywords: Childhood obesity, Overweight, Kids, Physical activity

Paper type: Research paper

International Journal
of Food, Nutrition and
Public Health (IJFNPH)
Vol. 6 No. 1, 2013

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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, 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 levels of overweight and obesity among children. Households of moderate to high SES had an elevated incidence of overweight worldwide (Wang, 2006; Wang *et al.*, 2002). People living in urban settings were more at risk than those living in rural settings. Wang and colleagues (Wang, 2006; Wang *et al.*, 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 obesity. 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 2–5, 6–11 and

12–19, respectively (Ogden *et al.*, 2002; Hedley *et al.*, 2004; Ogden *et al.*, 2008). Additionally, it has been found that in children aged 6–11, 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 behaviours in congruence with lack of physical activity are two of the leading contributors to 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 the 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, 2005; Power, 1997; Serdula, 1993).

The second leading cause of preventable diseases and death in the United States is obesity, topped only by smoking. The cost of treating obesity and its associated comorbidities reached 117 billion US 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; US Department of Health and Human Services, 2001).

Obesity at any age poses health risks. In early life, the increased risk occurs because children's bodies are exposed to obesity for longer periods and their 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. The 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 those at risk of obesity is because these areas do not have access to fresh and affordable food. Urban areas are food deserts lacking options in food and its 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 four or more days a week. However, 10% 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 programme was designed to increase physical activity in school children. For many, the only opportunity 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 five 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 that children are spending more time indoors participating in sedentary activities than outdoors getting the

recommended levels of physical activity. This may also be the reason for the 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 takes place 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% to 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 ignore 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 screen-time activities. 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 more 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 programme was implemented.

The BEFit Programme was designed to utilize the Coordinated Approach To Child Health (CATCH) programme and the State of NJ Model Nutrition Program as an intervention plan. The CATCH programme builds an alliance of children, parents, teachers and school staff to teach skills and behaviours 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 programme began with an introduction on the concepts of health and wellness for elementary school teachers, which was administered by YMCA-certified staff. The CATCH programme curriculum was then incorporated into classroom activities. The Y-certified fitness instructors mentored the teachers on the CATCH programme 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 programme initiated baseline assessments of the health- and skill-related components of fitness. The assessments followed the procedures of the FITNESSGRAM, a programme 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 programme, students participated in 30 minutes of structured physical activity during recess 4 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 programme.

The CATCH program was implemented as a format for the physical activities being performed. The BEFit programme used the 6–8-year-old CATCH age group, which included indoor and outdoor activities such as the human obstacle course, crazy colors, a nature scavenger hunt with pedometers, a walking programme, 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 comprised 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 programme designed infuses VMPA into recess by providing a certified fitness instructor during recess to implement a fun and age-appropriate VMPA programme for school children. The programme utilized 30 min (recess) daily for the structured programme, providing 150 min/wk of VMPA for the students. The programme was able to increase the percentage of students achieving 150 min/wk of VMPA from 11% at baseline to 93–99% throughout the school year. This programme 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 programme to ensure sustainability for future students.

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