



Science, Movement and Health, Vol. XIV, ISSUE 2 Supplement, 2014
September 2014, 14 (2, Supplement): 603-607
Original article

PHYSICAL EDUCATION PROGRAM AND CHILDRENE OBESITY: NOW AND FUTURE

ZAHRA RANJBAR¹, SYED KAMARUZAMAN SYED ALI¹

Abstract

Purpose. Children are prominent in obesity discussions, which are particularly fraught in light. There are many factors that may cause children to become obese. Most important factors are introduced in this commentary, also have suggests on how to limit and control them.

Conclusion. Creating new environments and social norms and physical education programs for children can support more healthful and active living and reduce obesity problem.

Key words: obesity, children, physical education.

Introduction

Childhood obesity is one of the most important public health challenges of the 21st century. The problem is general and is steadily affecting many low and middle income countries, particularly in urban settings. The prevalence has increased at an alarming rate. Globally, in 2010 the number of overweight children under the age of five is estimated to be over 42 million. Close to 35 million of these are living in developing countries (De Onis 2010, Aryana 2012).

Childhood and adolescents obesity, having both critical and long term negative outcomes, has been identified as a major health concern by the Centers for Disease Control and Prevention (Nowicka, 2007).

Some of the physical consequences include hyperinsulinemia, dyslipidemia, abnormal glucose tolerance, increased asthma symptoms, sleep apnea, fatty liver, and the development of Type 2 diabetes (Datar, 2004; Nowicka, 2007; Eime, 2013). There are also serious psychosocial burdens associated with childhood and adolescent obesity.

Low self-esteem, greater risk of depression, and continual feelings of shame have been consistently reported in overweight and obese children and adolescents. Many adolescents experience discrimination in the forms of teasing and social rejection. They are often perceived as being lazy, having no self-control, and ugly (Datar, 2004; Eime, 2013).

Many of these physical and psychosocial consequences continue on into adulthood. Overweight and obese adolescents are more acceptable to be overweight as an adult and at increased risk loss of life from all causes (Datar, 2004; Eime, 2013).

However, overweight children are at high risk of becoming overweight adolescents and adults. This commentary aimed to introduces factors that play important roles on childhood obesity and also have suggests on how to limit these factors.

Who is obese?

The words “overweight” and “obesity” are ways to describe having too much body fat. The most commonly used measure of weight status is the body mass index (BMI). BMI uses a calculation based on the ratio of someone’s height and weight ($BMI = Kg/m^2$). Children above the 85th percentile are classified overweight and those above the 95th percentile, obese (Datar, 2004).

The causes of the general increase in overweight and obesity are multifactorial, with changes in energy intake and expenditure related to both exact and obvious movements in societal behaviors. According literatures technology has contributed to obesity by making food more abundant, attractive, promoted and simply obtained. Energy expenditure has been reduced by an increase in sedentary activities (such as watching television and playing computer games) and an increase in the use of cars and other forms of transport. Exercise has now become a formal activity for many children (Datar, 2004, De Onis 2010).

Many scientists around the world try to find the solution to solve the children obesity problem because obese children are more likely to become obese adults. There are many physical and psychosocial outcomes of childhood obesity. Physical outcomes include many risk factors such as cardiovascular and heart diseases (Datar, 2004).

One of the important aspects of obesity is that obese people have very low activity they prefer to do sedentary activities rather than active works and especially sports. Low levels of physical activity are more effective for developing chronic health diseases (Datar, 2004).

There are many factors that may cause children to become overweight and obese. Following are the most important factors:

¹Faculty of Education, University of Malaya, MALAYSIA
E-mail: zahraranjbar@siswa.um.edu.my
Received 15.03.2014 / Accepted 24.05.2014



1. Environmental Factors
2. Sedentary pursuits
3. Physical activities
4. Teachers and parent's responsibility
5. Public education
6. Combination of physical education and proper diet

Therefore, in the following describe about the factors that mentioned above:

1- Environmental factors

Many environment factors can effective on obesity and performance, such as Education, economic development, culture and parent's motivation (Dunn, 2012). Research on the mediators of familial patterns of overweight and obese children suggests that overweight parents tend to create environments that promote overweight among their children (Siwik, 2013).

In the Malaysia research results that shown the higher obesity rates in Malayan people that education could improve the obesity level but economic development and education will likely not eliminate obesity inequality in the Malaysia (Dunn, 2012).

A variety of risk factors are associated with children and adolescent obesity. Some factors, like race, gender, and age, simply cannot be modified (Ogden, 2008; Shields, 2006; Singh, 2008). Other social and environmental factors, like parental education, socio-economic status (SES), neighborhood safety, and racial/ethnic inequalities are very difficult to modify (Singh, 2008).

Behavioral factors that influence children and adolescent obesity, such as dietary, sedentary, and physical activity behaviors, have been studied extensively (Singh, 2008). Lifestyle interventions can effective on children and adolescent obesity that focuses on modifying these behaviors (Nowicka, 2007).

2- Sedentary pursuits

Many studies have reported an association between sedentary behaviors and overweight and obesity (Wake, 2012). However, there have been different findings when reporting the associations between times spent in various sedentary behaviors and weight status. Time spent watching television and time on the computer or playing video games are two sedentary behaviors that have been studied frequently (Wake, 2012).

When compared to television watching, time spent on the computer and playing video games is many

times reported as a less risky behavior for most children and adolescents (Koezuka, 2006). High levels of sedentary activity (TV and computer use) were seen in many children and caused greater incidence of overweight, obesity and morbid obesity (Wake, 2012).

In addition, although it is generally agreed that television may be related to the onset of obesity and reduced physical activity in students (Goran, 1999). Tremblay and their collages suggested that daily TV viewing in excess of 2 hours is associated with reduced physical and psychosocial health, and that lowering sedentary time leads to reductions in BMI (Tremblay, 2011).

It was determined that increased sedentary time was associated with negative health outcomes in both boys and girls. Furthermore, children and youth should try to minimize the time they spend engaging in other sedentary pursuits throughout the day (for example: playing video games, using the computer for non-school work or prolonged sitting) (Tremblay, 2011).

Also, many studies have reported an association between sedentary behaviors and overweight and obesity (Shields, 2006; Koezuka, 2004; Tremblay, 2011). Especially time spent watching television and time on the computer or playing video games are two sedentary behaviors that have been studied frequently (Koezuka, 2004).

Many studies report that there is a positive relationship between times that spent for playing computer games and watching television using the computer (screen time) and BMI (Koezuka, 2004; Tremblay, 2011).

A 2004 study by Shields and his colleagues found that students aged 6-11 who spent 2 or more hours of "screen time" were twice as likely to be overweight or obese compared to children that spent a combined hour or less involved in these activities.

The same study reported that 35% of adolescents, ages 12-17, who watch 30 or more hours of television per week were overweight or obese compared to only 23% of adolescents watching less than 10 hours of television per week. They suggest that some adolescents need great amounts of encouragement and motivation to be physically active at all (Shields, 2006).

3- Physical activities

The second factor that may cause children to become overweight is lack of physical activities. Most of the scientists are agree about the critical role of fitness activities and physical education program on children obesity and motivation. There are many researches about the intensity levels of fitness program.

As an example, Steele and Sharp (2010) confirmed the patterns of vigorous and sedentary activities during different parts of the week (weekend, school-based and out-of-school) they also investigated differences in activity behavior by sex and weight status (Steele, 2010).



Their findings showed the promotion of vigorous physical activity during the weekend may hold the greatest promise for increasing vigorous fitness activities. Therefore, they suggested that increasing physical activity in children should aim to target all children independent of sex or weight status (Steele, 2010).

Furthermore, Eime and their colleagues reported that participation in sport for children and adolescence is associated with improved psychological and social health. More specifically, there are reports that participation in team sports rather than individual activities is associated with better health. It is conjectured that this is due to the social nature of team sport, and that the health benefits are enhanced through positive involvement of peers and adults (Eime, 2013).

Physical activity also puts children and adolescents at decreased risk of cardiovascular disease risk factors and metabolic syndrome development by helping to maintain normal blood pressure, blood lipid level, and insulin responsibility (Eime, 2013).

Participant in regular physical activity also seem to gain other psychosocial benefits in addition to the physical benefits mentioned previously. Physically active adolescents are less likely to experience symptoms of depression, experience higher life satisfaction, increased self-esteem, and decreased stress (Eime, 2013).

Several studies concluded that although a multi-pronged approach is needed to combat obesity, schools are in a "unique position to play a pivotal role in promoting healthy lifestyles and helping to prevent obesity" in children (Story, 1999). But, unfortunately, the role of physical activity in the development of obesity and body weight regulation remains controversial (Goran, 1999).

One study suggested that daily physical activity and participation in sport were not significantly correlated with body weight and body mass index (BMI), but were positively associated with children's motor performance (Sacchetti, 2012).

The other study showed preventive intervention in primary school offers the possibility to improve physical performance in children, but the prevalence and incidence of obesity was not affected (Graf, 2008). Students spend many hours in school, making physical education (PE) programs in schools a potentially important way through which physical activity and fitness may be promoted young children (Datar, 2004).

About the role of schools and PE programs many teachers did not believe schools were doing enough to alleviate childhood obesity, and they need to support by the number of school-based weight reduction techniques (Price, 1990). They suggested that three leading sources of information on weight control were physical education journals (73 percent), the mass media (59 percent), and past experience (49 percent) (Price, 1990).

Physical activity is hypothesized to protect from the development of obesity through several channels.

First, physical activity, by definition, results in an increase in energy expenditure due to the cost of the activity itself and is also hypothesized to increase resting metabolic rate (RMR). Second, physical activity has beneficial effects on substrate metabolism, with an increased reliance on fat, relative to carbohydrate, for fuel utilization (Goran, 1999).

For solving obesity problem many committees in United States design physical education (PE) program and urges all school systems to do daily PE that totals at least 150 minutes per week for elementary school students. However, as of 2006, only 3.8% of elementary schools were have 150 minutes of PE per week (Cawley, 2012).

Also, there is little evidence of a critical role of physical education (PE) on youth obesity. There are several reasons that extra physical education (PE) program may not lower weight or the risk of obesity. First, teachers in physical education (PE) classes may not implicate much physical activity and don't doing action and playing during the class (Cawley, 2012).

Several studies have used direct observation or accelerometers to measure the amount of time that students spend physically active during physical education (PE); they conclude that students spend only 9-42% of physical education (PE) time engaged in moderate to vigorous physical activity. A second proceed is that students may equalize any additional physical activity during physical education (PE) by decreasing physical activity outside of school, with little net impact on physical activity or weight (Cawley, 2012).

4- Teachers and parent's responsibility

The third factor that may cause children to become overweight and obese is lack of school responsibility. Until today all of the scientists are agree that regular physical activities can be effective on obesity especially in children if they motivated them for doing activity. Also, schools have very critical role for solving obesity problem.

The several reports also address parental support for increased physical education and make two national recommendations for physical education in schools. In terms of public support, the report presents statistics showing that ninety five percent of parents believe physical education should be part of the school curriculum at all levels, eighty-five percent of parents believe that education should take place daily and three quarters of parents and teachers think physical education should be maintained in the face of standards based reform or other inexpensive concerns (Parsad, 2006).

The authors recommend that children should have sixty minutes of physical activity daily and that elementary school children should be engaged in at least 150 minutes of physical education classes each week (Parsad, 2006).



Another factor that may cause children and adolescents to become overweight and obese is lack of school responsibility. Until today all of the scientists are agree that regular physical activities can be effective on obesity if they motivated them for doing activity. Also, schools have very critical role for solving obesity problem.

In this regard Datar and Sturm (2004) examined the effect of physical education programs on body mass index (BMI) change in students (Datar, 2004). They suggested that school plays an important role in keeping obesity among girls in check and that expanding existing physical education in US elementary schools could reduce obesity rates among girls. Also, expanding physical education programs in schools may be an effective for combating obesity in the early years, especially among girls (Datar, 2004).

5- Public education

The forth factor that may cause children to become overweight is lack of public education. The overall education is very important. Government should be making a situation for educating doing physical activity as a culture to all of the people. Public education through the mass media and arouse the minds of families can be very effective for them to be emphasize the problem of obesity in children. Wake and Reeves (2012) in their research compared the school-aged children in France and England because there are differences in obesity rates between the two countries (Wake, 2012). Their reported that energy balance (balance between energy production and consumption), in terms of both physical activity and food intake, is a key factor in the differences in the incidence of obesity between the French and English children in this study. Also, the most children spend up to 8 hours a day at school, this is the suitable environment for an obesity prevention programs (Wake, 2012).

Knowledge of nutrition, distance walked to school and participation in physical activities has all been shown to have positive effects on obesity prevention in their research. Furthermore, Wake and his colleges suggested that these factors can be easily facilitated and incorporated into the daily school routine to help prevent and reduce the incidence of obesity amongst school-aged children (Wake, 2012).

6- Combination of physical education and proper diet

The fifth factor that may cause children to become overweight is lack of combination of physical education and proper diet. Recent study in the United States by Aryana (2012) confirmed that obesity rates have reached epidemic proportions (Aryana, 2012). Thus, the California Department of Education began a series of steps to address the increase in obesity and decline in fitness in the population of public school children in California (Aryana et al., 2012).

They evaluated serial changes in obesity and fitness in California school children. Overall fitness improved from 2003 to 2008. They showed that serial changes in body composition, flexibility, aerobic capacity, and strength improved or remained stable within school. However, Aryana (2012) confirmed that students were more obese every year, and this obesity was not reversible within the school programs. Also, continued increases in obesity will require additional efforts directed at preschool and elementary students to completely stop and reverse this obesity epidemic. Their results showed that school fitness activity program alone was not efficient for reduce children obesity (Aryana, 2012).

Conclusion

Future researches should be down focused on finding suitable protocols for education to children and their parents, healthy eating habits in children, involve parents in weight management, increased physical activity, decreased sedentary activity and behavior modification is recommended for treatment of overweight and obese children.

Eventually, people all of the world specially parents, caregivers, teachers, coaches, mentors and public health leaders it is their responsibility to take immediate action for solving this serious and growing public health epidemic problem. We should work collaboratively, using public education, available science and evidence of effective programs to ensure that our children receive encouragement and guidance to make healthful choices for physical activity and good nutrition. Our children are our future; help them to make their future healthy through efforts to prevent overweight and obesity.

Comment

As a community, we must create new environments and social norms for children and ourselves that support more healthful and active living. Finally, sport is an appropriate strategy to achieve this goal.

References

- Aryana, M., Li, Z., & Bommer, W. J. 2012. Obesity and physical fitness in California school children. *American heart journal*, 163(2), 302-312.
- Cawley, J., Frisvold, D., & Meyerhoefer, C. 2012. *The impact of physical education on obesity among elementary school children* (No. w18341). National Bureau of Economic Research.
- Datar, A., & Sturm, R. 2004. Physical education in elementary school and body mass index: evidence from the early childhood longitudinal study. *American Journal of Public Health*, 94(9), 1501-1506.
- De Onis, M., Blössner, M., & Borghi, E. 2010. Global prevalence and trends of overweight and obesity among preschool children. *The*



- American journal of clinical nutrition*, 92(5), 1257-1264.
- Dunn, R. A., Tan, A. K., & Nayga, R. M. 2012. Obesity inequality in Malaysia: decomposing differences by gender and ethnicity using quantile regression. *Ethnicity & Health*, 17(5), 493-511.
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. 2013. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition & Physical Activity*, 10(1).
- Goran, M., Reynolds, K., Lindquist, C. 1999. Role of physical activity in the prevention of obesity in children. *International Journal of Obesity*, 23(Suppl 3) S18-S33
- Graf, C., Koch, B., Falkowski, G., Jouck, S., Christ, H., Staudenmaier, K., ... & Dordel, S. 2008. School-based prevention: effects on obesity and physical performance after 4 years. *Journal of sports sciences*, 26(10), 987-994.
- Korsten-Reck, U., Kaspar, T., Korsten, K., Kromeyer-Hauschild, K., Bos, K., Berg, A., & Dickhuth, H. H. 2007. Motor abilities and aerobic fitness of obese children. *International journal of sports medicine*, 28(9), 762-767.
- Kuczmarski, R. J., Ogden, C. L., Grummer-Strawn, L. M., Flegal, K. M., Guo, S. S., Wei, R., ... & Johnson, C. L. 2000. CDC growth charts: United States. *Advance data*, (314), 1.
- Nowicka, P., & Flodmark, C. E. 2007. Physical activity—key issues in treatment of childhood obesity. *Acta Paediatrica*, 96(s454), 39-45.
- Ogden, C. L., Carroll, M. D., & Flegal, K. M. 2008. High body mass index for age among US children and adolescents, 2003-2006. *JAMA: the journal of the American Medical Association*, 299(20), 2401-2405.
- Parsad, B., & Lewis, L. 2006. Calories in, calories out: food and exercise in public elementary schools, 2005 (NCES 2006-057). *US Department of Education. Washington, DC: National Center for Education Statistics*.
- Price, J. H., Desmond, S. M., & Ruppert, E. S. 1990. Elementary physical education teachers' perceptions of childhood obesity. *Health Education*, 21(6), 26-32.
- Sacchetti, R., Cecilian, A., Garulli, A., Masotti, A., Poletti, G., Beltrami, P., & Leoni, E. 2012. Physical fitness of primary school children in relation to overweight prevalence and physical activity habits. *Journal of sports sciences*, 30(7), 633-640.
- Shields, M. (2006). Overweight and obesity among children and youth. *Health Rep*, 17(3), 27-42.
- Singh, G. K., Kogan, M. D., Van Dyck, P. C., & Siahpush, M. 2008. Racial/ethnic, socioeconomic, and behavioral determinants of childhood and adolescent obesity in the United States: analyzing independent and joint associations. *Annals of epidemiology*, 18(9), 682.
- Siwik, V., Kutob, R., Ritenbaugh, C., Cruz, L., Senf, J., Aickin, M., ... & Shatte, A. 2013. Intervention in Overweight Children Improves Body Mass Index (BMI) and Physical Activity. *The Journal of the American Board of Family Medicine*, 26(2), 126-137.
- Steele, R. M., van Sluijs, E. M., Sharp, S. J., Landsbaugh, J. R., Ekelund, U., & Griffin, S. J. 2010. An investigation of patterns of children's sedentary and vigorous physical activity throughout the week. *Int J Behav Nutr Phys Act*, 7(1), 88.
- Story, M. 1999. School-based approaches for preventing and treating obesity. *International Journal of Obesity*, 23, S43-S51.
- Tremblay, M. S., LeBlanc, A. G., Kho, M. E., Saunders, T. J., Larouche, R., Colley, R. C., ... & Gorber, S. C. 2011. Systematic review of sedentary behaviour and health indicators in school-aged children and youth. *Int J Behav Nutr Phys Act*, 8(1), 98.
- Wake, Y., & Reeves, S. 2012. Factors that influence obesity in children at primary schools in England and France. *International Journal of Health Promotion and Education*, 50(1), 2-9.