

## Can We Slow Down the Global Increase of Adiposity?

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Excess bodyweight is a major public health concern increasing worldwide with substantial variation between nations. Between 1980 and 2008, mean body mass index (BMI) increased by 0.4 kg/m<sup>2</sup> per decade for men and by 0.5 kg/m<sup>2</sup> for women. In 2008, an estimated 1.46 billion adults worldwide had BMI of 25 kg/m<sup>2</sup> or greater.

Among the high-income countries, United States had the highest BMI.<sup>1</sup> Recent birth cohorts are becoming obese in greater proportions for a given age, and are experiencing a greater duration of obesity over their lifetime.<sup>2</sup> Global prevalence of childhood adiposity increased dramatically since 1990 starting already in preschool children. In 2010, 43 million children (35 million in developing countries) were estimated to be overweight or obese. The worldwide prevalence increased from 4.2% in 1990 to 6.7% in 2010 and is expected to increase to 9.1% in 2020.<sup>3</sup> In the semi-rural community Bogalusa (Louisiana), childhood obesity epidemic has not overplateaued and the proportion of weight/obese 5 to 17 years old youths even increased from 5.6% in 1973/1974 to 30.8% in 2008/2009.4

Because adiposity is associated with cardiometabolic risk factors, even in young children, and higher BMI during children is associated with an increased risk of coronary heart disease (CHD) in adulthood, successful prevention of adiposity in youth could reduce cardiovascular disease (CVD) in adults.<sup>5-8</sup> An elevated BMI in adolescence constitutes a substantial risk factor for obesity-related disorders in midlife. Elevated BMI in both adolescence and adulthood were independently associated with angiography– proven CHD.<sup>9</sup> Effective treatment of obese individuals can substantially reduce risk factors for CVD and improve disease management.<sup>10</sup>

The stable or decreasing trends in central and Eastern Europe for women between 1980 and  $2008^1$  indicate that we may slow down the in-

crease of adiposity. However, the intrinsic interplay among eating patterns, physical activity, and sedentary behavior limits implementation of simple recommendations. This is complicated further by overlap of genetic and environmental factors. Nevertheless, the American Heart association highlighted evidence-based experience for population–wide approaches to obesity prevention.<sup>11</sup> In the first place, it is preferable to avoid the excess weight gain that leads to overweight and then obesity.

The need for treatment is highest among lowincome and ethnic minority populations who have a high burden of obesity but less access to health services. Ethnic disparities in obesity prevalence apply to both BMI and Waist circumference (WC). For example, the clinical consequences of obesity are higher for Asian descent at lower BMI and WC cut points than for whites. Thus a WHO report suggested that overweight in adults should be defined as a BMI of 23 kg/m<sup>2</sup> instead of generally used 25 kg/m<sup>2</sup> and a more recent article called for revisions of BMI criteria for South Asians, Chinese, and Aboriginals.<sup>12</sup> Ethnic disparities in BMI and WC, such as defining the components of the metabolic syndrome, are also observed in male and female children and adolescents.<sup>14,15</sup> Therefore, nationality specific percentile curves are mandatory. Examples for children and adolescents are given.<sup>16,17</sup>

Arresting development of obesity in childhood has the greatest long-term payoff in years of healthy life.<sup>11</sup> The United States preventive Services Task Force recommends comprehensive moderate– to high-intensity programs that include dietary, physical activity, and behavioral conunseling components.<sup>18</sup> The Task Force found adequate evidence that multi-component, moderate- to high-intensity behavioral interventions for obese children and adolescents can effectively yield short-term (up to 12 months) improvements in weight status. Inadequate evidence was found regarding the effectiveness of low-intensity interventions. Family–based programs for overweight/obese children might be a promising approach for long-term weight reduction in moderately obese children who maintained body weight for two years by teaching parents only.<sup>19</sup> Among 3 programs, the parentcentered dietary modification approach was more successful than the child-centered physical activity program or both.<sup>20</sup>

In the USA the prevalence of high BMI for age among children and adolescents did not increase significantly between 2003 and 2006. This might be a positive signal that we can slow down the increase of adiposity if we intensify global efforts following the recommendation of McCarthy <sup>21</sup> to aim at a waist-to-height ratio of 0.5 disregarding age and gender.

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## **REFERENCES**

- Finucane MM, Stevens GA, Cowan MJ, Danaei G, Lin JK, Paciorek CJ, et al. National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9,1 million participants. Lancet 2011; 9765(377): 557-67.
- Lee JM, Pilli S, Gebremariam A, Keirns CC, Davis MM, Vijan S, et al. Getting heavier, younger: trajectories of obesity over the life course. Int J Obes (Lond) 2010; 34(4): 614-23.
- **3.** de Onis M, Blossner M, Borghi E. Global prevalence and trends of overweight and obesity among preschool children. Am J Clin Nutr 2010; 92(5): 1257-64.
- **4.** Broyles S, Katzmarzyk PT, Srinivasan SR, Chen W, Bouchard C, Freedman DS, et al. The pediatric obesity epidemic continues unabated in Bogalusa, Louisiana. Pediatrics 2010; 125(5): 900-5.
- **5.** Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. Pediatrics 1999; 103(6 Pt 1): 1175-82.
- **6.** Geiss HC, Parhofer KG, Schwandt P. Parameters of childhood obesity and their relationship to cardiovascular risk factors in healthy prepubescent children. Int J Obes Relat Metab Disord 2001; 25(6): 830-7.
- Baker JL, Olsen LW, Sorensen TI. Childhood bodymass index and the risk of coronary heart disease in adulthood. N Engl J Med 2007; 357(23): 2329-37.
- **8.** Haas GM, Liepold E, Schwandt P. Predicting Cardiovascular Risk Factors by dIfferent Body Fat Patterns in 3850 German Children: the PEP Family Heart Study. Int J Prev Med 2011; 2(1): 15-9.

- **9.** Tirosh A, Shai I, Afek A, Dubnov-Raz G, Ayalon N, Gordon B, et al. Adolescent BMI trajectory and risk of diabetes versus coronary disease. N Engl J Med 2011; 364(14): 1315-25.
- **10.** Poirier P, Giles TD, Bray GA, Hong Y, Stern JS, Pi-Sunyer FX, et al. Obesity and cardiovascular disease: pathophysiology, evaluation, and effect of weight loss: an update of the 1997 American Heart Association Scientific Statement on Obesity and Heart Disease from the Obesity Committee of the Council on Nutrition, Physical Activity, and Metabolism. Circulation 2006; 113(6): 898-918.
- **11.** Kumanyika SK, Obarzanek E, Stettler N, Bell R, Field AE, Fortmann SP, et al. Population-based prevention of obesity: the need for comprehensive promotion of healthful eating, physical activity, and energy balance: a scientific statement from American Heart Association Council on Epidemiology and Prevention, Interdisciplinary Committee for Prevention (formerly the expert panel on population and prevention science). Circulation 2008; 118(4): 428-64.
- **12.** Razak F, Anand SS, Shannon H, Vuksan V, Davis B, Jacobs R, et al. Defining obesity cut points in a multiethnic population. Circulation 2007; 115(16): 2111-8.
- **13.** Zimmet P, Alberti G, Kaufman F, Tajima N, Silink M, Arslanian S, et al. The metabolic syndrome in children and adolescents. Lancet 2007; 369(9579): 2059-61.
- **14.** Schwandt P, Kelishadi R, Haas GM. Ethnic disparities of the metabolic syndrome in population-based samples of german and Iranian adolescents. Metab Syndr Relat Disord 2010; 8(2): 189-92.
- **15.** Schwandt P, Kelishadi R, Ribeiro RQ, Haas GM, Poursafa P. A three-country study on the components of the metabolic syndrome in youths: the BIG Study. Int J Pediatr Obes 2010; 5(4): 334-41.
- **16.** Schwandt P, Kelishadi R, Haas GM. First reference curves of waist circumference for German children in comparison to international values: the PEP Family Heart Study. World J Pediatr 2008; 4(4): 259-66.
- **17.** Haas GM, Liepold E, Schwandt P. Percentile curves for fat patterning in German adolescents. World J Pediatr 2011; 7(1): 16-23.
- **18.** US Preventive Services Task Force. Screening for Obesity in Children and Adolescents: US Preventive Services Task Force Recommendation Statement. Pediatrics, 2010.
- **19.** Magarey AM, Perry RA, Baur LA, Steinbeck KS, Sawyer M, Hills AP, et al. A parent-led familyfocused treatment program for overweight children aged 5 to 9 years: the PEACH RCT. Pediatrics 2011; 127(2): 214-22.
- **20.** Collins CE, Okely AD, Morgan PJ, Jones RA, Burrows TL, Cliff DP, et al. Parent diet modification, child activity, or both in obese children: an RCT. Pediatrics 2011; 127(4): 619-27.
- **21.** Ogden CL, Carroll MD, Flegal KM. High body mass index for age among US children and adolescents, 2003-2006. JAMA 2008; 299(20): 2401-5.