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Editorial board

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PREVALENCE AND TRENDS IN OBESITY AND PHYSICAL INACTIVITY AMONG SAUDI CHILDREN AND ADOLESCENTS: A GROWING PUBLIC HEALTH CHALLENGE

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During the last three decades, Saudi Arabia has witnessed enormous lifestyle changes. Consequently, physical inactivity and sedentary living with associated rise in obesity are increasingly becoming prevalent in the society (1, 2). The rising trends in obesity prevalence reflect a population shift towards positive energy balance (3). This abstract highlights some of our major research findings on physical activity/inactivity and obesity relative to cardiovascular health and fitness of Saudi children and youth.

The results of objective monitoring of daily physical activity levels, using heart rate telemetry, accelerometry and pedometry, indicated that over 70% of Saudi preschool children, about 60% of elementary school children and 71% of youth were not active enough to meet the minimal weekly requirement of moderate-to-vigorous health-enhancing physical activity (4, 5, 6). The proportions of Saudi children and youth who are at risk of physical inactivity are exceedingly higher than those who are at risk for hypertension, hypercholesterolemia, hypertriglyceridemia, or any other CHD risk factors (7). Obese 8-12-year-old Saudi boys were significantly less active than non-obese boys. Active boys, on the other hand, exhibited significantly lower body fat percentage and BMI than inactive peers (8). In addition, active Saudi boys tend to have favorable levels of serum triglycerides and high-density lipoprotein-cholesterol compared with inactive boys (6).

In addition, body composition assessments conducted on Saudi school children indicated a high prevalence of obesity among them. Cross-sectional as well as longitudinal observations indicated that the obesity level is on the rise among Saudi children and youth (2, 9, 10). Recent findings of primary school boys living in Riyadh showed that the mean body fat percentage increased with age from 14.2% in the first graders to 24.6% in the sixth graders (9). In fact, not just body fat percentage increased with age among pre-school and primary school children but also fat mass (kg) and fat mass index (kg/m^2) (4, 8). Comparison made between two sets of cross-sectional data conducted in the years 1988 and 2005 on Saudi school boys from Riyadh provided compelling evidence on the

rising trends in body mass index, body fat percentage, central adiposity, and the prevalence of obesity among school boys, aged 6-14 years (9). Only 29% of primary school boys in urban areas walk to and from school. Boys who walked to school were found to have significantly less percentage of body fat than those boys transported to school by cars.

Furthermore, our decade-long longitudinal assessment of Saudi youth indicated that the percentage of young Saudi males who were at risk for CAD increased substantially from childhood to early adulthood. Most notably, huge increases in obesity (5-fold), physical inactivity (30%), low cardiorespiratory fitness (>3-fold), low HDL-C (3.5-fold), and television viewing (>3-fold) were seen. Obese youth exhibited significantly higher levels of total cholesterol and triglycerides, as well as lower levels of HDL-C and the HDL-C/TC ratio (10). Our findings also indicated that tracking coefficients from childhood to adulthood for blood lipids, blood pressure and body fatness appeared fairly strong ($r = 0.42-0.58$). Physical activity, on the other hand, showed a fairly low tracking coefficient.

Our early research findings also showed that fit children were more active than less fit children (5, 6). Body fatness correlated positively with several coronary heart disease risk factors, and negatively with cardiorespiratory fitness and physical activity (6). Obese youth tend to have less favorable levels of blood pressure, blood lipids and cardiorespiratory fitness compared with non-obese peers (10). They also spend more time viewing television (TV) and expend less energy in physical activity. Factors that predict physical inactivity to the greatest extent were obesity, low cardiorespiratory fitness, poor physical education program, time spent watching TV, and parental physical activity levels (5).

In conclusion, based on the available evidence, obesity and physical inactivity among Saudi children and youth represent a growing public health challenge, and actions to control obesity and promote physical activity must begin now. It is very critical that preventive strategies are implemented through schools and community-based programs, with involvement from health care providers, school teachers, community leaders, and policy makers, as well as parents.

Key words: Obesity, pediatrics, children, adolescent, Saudi Arabia, physical inactivity, trends, longitudinal, study

References

1. Al-Hazzaa, H. (2004) The public health burden of physical inactivity in Saudi Arabia. *J Comm Fam Med.* **11** , pp. 45-51.
2. Al-Hazzaa, H. (2007) Rising trends in BMI of Saudi adolescents: Evidence from three national cross sectional studies. *Asia Pac J Clin Nutr.* **16** , pp. 462-466.
3. Al-Hazzaa, H. (2001) Physical inactivity and obesity in Saudi Arabia: a critical analysis. *Saudi Sports Med J.* **5**: 2 , pp. 9-16.

4. Al-Hazzaa, H. and Al-Rasheedi, A. (2007) Adiposity and physical activity among preschool children in Jeddah, Saudi Arabia. *Saudi Med J.* **28** , pp. 766-773.
5. Al-Hazzaa, H. (2002) Physical activity, fitness and fatness among Saudi children and adolescents: Implication for cardiovascular health. *Saudi Med J.* **23** , pp. 144-150.
6. Al-Hazzaa, H., Sulaiman, MA Al-Matar, AJ et al. (1994) Cardio-respiratory fitness, physical activity patterns, and selected CAD risk factors in preadolescent boys. *Int J Sports Med.* **15**:5 , pp. 267-272.
7. Al-Hazzaa, H., Sulaiman, M. Al-Mobaireek, K. et al. (1993) Prevalence of coronary artery disease risk factors in Saudi children. *J Saudi Heart Assoc.* **5**:3 , pp. 126-133.
8. Al-Hazzaa, H. (2007) Pedometer-determined physical activity in obese and non-obese boys 8-12 years. *J Physiol Anthropol.* **26** , pp. 459-465.
9. Al-Hazzaa, H. (2007) Prevalence and trends in obesity among school children in central Saudi Arabia between 1988 and 2005. *Saudi Med J.* **28** , pp. 1569-1574.
10. Al-Hazzaa, H. (2004) *Health-related Physical Activity and Cardiovascular Health and Fitness among Saudi Youth* — Final Reports, King Abdulaziz City for Science & Technology