

Alarming increase in the prevalence of childhood dyslipidemia in elementary schoolchildren in East of Iran

Sir,

Cardiovascular disease (CVD) is a major cause of morbidity and mortality worldwide. CVD in Iran as in many developing countries is increasing.^[1] The relationship between serum lipids and CVD has been identified. It is known that atherosclerosis begins in childhood and serum lipid concentrations in childhood are associated with the development of atherosclerotic lesions.^[2] Even though CVD is not seen in children, but cardiac risk factors such as dyslipidemia may be observed in childhood and remain until adulthood. Dyslipidemia refers to the abnormal lipoprotein metabolism in the form of high cholesterol (TC), high triglyceride (TG) and high low density lipoprotein (LDL) or low high density lipoprotein (HDL). Serum lipid levels in children are related to sex, race and age. Mean cholesterol level in children is increasing in many countries due to urbanization, industrialization and increased consumption of high fat and fast foods.^[3,4]

We have analyzed the lipid profile among 1,626 schoolchildren between 6-11 years (879 girls and 741 boys) in east of Iran, Birjand during 2012 (Research project Number 610). Samples were selected through a multi-stage cluster sampling. Serum lipids were measured after 12 h fasting. The prevalence was as follows: High cholesterol 13.4%, high LDL 8.5%, high TG 15.3% and low HDL 11.3%.

A similar study was conducted in 2006 on 1,326 children between 7 to 12 years (641 boys and 685 girls) in the Southern Province.^[5] And prevalence of dyslipidemia in 2006 was as follows: High cholesterol 3%, high LDL 4/1%, high TG 5/4% and low HDL 14/1%.^[5]

Comparing the results of these two studies showed that hypercholesterolemia increased about 4 times, hypertriglyceridemia increased 3 times, high LDL was about 2 times higher and low HDL was decreased. A similar study in Turkey, the prevalence of dyslipidemia in children and adolescents had increased considerably.^[6] In addition, obesity and overweight in schoolchildren has increased considerably in East of Iran.^[7]

Childhood dyslipidemia and obesity are multi-factorial conditions resulting from an interaction between genetics and environment factors such as nutrition, physical inactivity and socio-cultural influences.

Westernized diet (high amounts of meats, refined grains, pizza, sodas and snack foods) with sedentary lifestyle habits may explain the increase in lipids and adiposity among the children and adolescents.^[8]

In order to decrease the childhood dyslipidemia and obesity, lifestyle and nutritional habits must be modified without subjecting the children to restrictive diets, giving healthier foods, such as vegetable oils and fats, insoluble and soluble dietary fiber, fish, whole grains, low-fat dairy products and a reduction of simple or refined sugars such as fruit juice, sugar-sweetened beverages and fast foods. Physical activity should be increased by reducing sedentary time (watching television, playing computer and video games). Parents should try to be role models for active lifestyles and provide the children with opportunities for increased physical activity.

In conclusion, obesity and dyslipidemia are health problems that require immediate attention in Iranian child.

Fatemeh Taheri, Toba Kazemi¹, Azita Fesharakinia²

Atherosclerosis and Coronary Artery Research Center, Department of Pediatrics, Vali-e-Asr Hospital, Birjand University of Medical Sciences (BUMS), Birjand, Iran
¹Atherosclerosis and Coronary Artery Research Center, Department Of Cardiology ²Department of Pediatric Nephrology, Vali-e-Asr Hospital, Birjand University of Medical Sciences (BUMS), Birjand, Iran

Address for correspondence: Dr. Toba kazemi, Atherosclerosis and Coronary Artery Research Center, Department of cardiology, Birjand University of Medical Sciences(BUMS), Birjand, Iran. E-mail: drtooba.kazemi@gmail.com

REFERENCES

1. Kazemi T, Sharifzadeh G, Zarban A, Fesharakinia A. Comparison of components of metabolic syndrome in premature myocardial infarction in an Iranian population: A case-control study. *Int J Prev Med* 2013;4:110-4.
2. Expert Panel on integrated guidelines for cardiovascular health and risk reduction in Children and Adolescents, National Heart, Lung, and Blood institute. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: Summary report. *Pediatrics* 2011;128(Suppl 5):S213.
3. Hosseini-Esfahani F, Mousavi Nasl Khameneh A, Mirmiran P, Ghanbarian A, Azizi F. Trends in risk factors for cardiovascular disease among Iranian adolescents: The Tehran lipid and glucose study, 1999-2008. *J Epidemiol* 2011;21:319-28.
4. Kelishadi R, Hashemipour M, Sheikh-Heidar A, Ghatreh-Samani SH. Changes in serum lipid profile of obese or

- overweight children and adolescents following a lifestyle modification course. *ARYA Atheroscler* 2012;8:143-7.
5. Fesharakinia A, Zarban A, Sharifzadeh GR. Lipid profiles and prevalence of dyslipidemia in schoolchildren in South Khorasan Province, Eastern Iran. *Arch Iran Med* 2008;11:598-601.
 6. Agirbasli M, Adabag S, Ciliz G. Secular trends of blood pressure, body mass index, lipids and fasting glucose among children and adolescents in Turkey. *Clin Obes* 2011;1:161-7.
 7. Taheri F, Kazemi T, Chahkandi T, Namakin K, Zardast M, Bijari B. Prevalence of overweight, obesity and central obesity among elementary school children in Birjand, East of Iran, 2012. *J Res Health Sci* 2013;13:157-61.
 8. Bahreynian M, Paknahad Z, Maracy MR. Major dietary patterns and their associations with overweight and obesity among Iranian children. *Int J Prev Med* 2013;4:448-58.