

Editorial

Fast Food Intake among Iranian Adults: Is it related to Diet Quality and Cardiovascular Risk Factors?

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Cardiovascular disease is the leading cause of death worldwide with nearly 80% of deaths occurring in developing countries.¹ Despite the decreasing trend of cardiovascular death rates in most developed countries, rates have grown in developing countries.² In Iran, the Ministry of Health and Medical Education has reported that 38% of total mortality rates could be attributed to cardiovascular diseases.³ Some cardiovascular risk factors are more prevalent among Iranians compared with those in developed countries. Previous investigations have reported great differences in the prevalence of low serum HDL-cholesterol and hypertriglyceridemia between the Iranian population and those in the US and Europe.⁴ For example, while low serum HDL-cholesterol is prevalent among 37% of US adults,⁵ the corresponding figure for Iranian adults is 69%.⁶ Such huge discrepancies cannot be explained by genetic factors alone. Lifestyle-related factors, including diet, might contribute to this difference.

Several dietary factors such as refined grains, red meat, trans and saturated fats, as well as dietary energy density have been associated with increased risk of cardiovascular disease,⁷⁻⁹ whereas consumption of whole-grains, fruits and vegetables, and legumes have been reported as protective dietary components against cardiovascular risks.^{10,11} Over the last two decades particular attention has been given to fast food intake as a contributing factor to the obesity epidemic and increasing prevalence of cardiovascular disease. In this issue of the *Archives of Iranian Medicine*, Bahadoran et al.¹² have reported findings from a cross-sectional study that aimed to investigate fast food intake in relation to diet quality and cardiovascular risk factors among 1944 Iranian adults residing in district 13 of Tehran. They found that those in the top tertile of fast food consumption were more likely to have higher intakes of energy, total and saturated fats, cholesterol, sodium, meats and soft drinks and lower intakes of carbohydrates and whole grains compared with those in the bottom tertile. The researchers also noted significant, but weak, associations between fast food intake and anthropometric measures of BMI and waist circumference among individuals aged 19–30 years; however, these associations did not exist among the older age (31–50 years) category. Fast food intake was also significantly associated with serum triglycerides, HDL-cholesterol and the atherogenic index of plasma in middle-aged, not young, adults. Together, these findings suggest that fast food consumption is asso-

ciated with poor diet quality and increased levels of cardiovascular risk markers. To our knowledge, this study is the first that relates fast food consumption to cardiovascular risks among Iranian adults. Although the findings are interesting, there are several points discussed below which need to be considered.

Fast food intake among Iranians

Although fast food consumption has steadily increased worldwide, limited data exists regarding the amount of fast food consumption among Iranians. Although fast food-chronic disease relations have been reported in some cases, the amount of fast food intake has not been reported in earlier investigations. Furthermore, most available studies in this regard have focused on children and adolescents rather than adults. Among Isfahani children, Keli-shadi et al.¹³ have reported that overweight or obese adolescents consumed 2.7 ± 0.4 times/week fast foods compared with 1.2 ± 0.3 times/week in normal-weight counterparts. In the framework of the Isfahan Healthy Heart Program, the investigators have reported an average frequency intake of 2.6 times/week of pizza and other fast food in Isfahani adolescents and 1.22 times/week in Najafabad and Arak, which was significantly higher in urban areas compared with rural areas.¹⁴ We are unaware of additional studies that have reported the amount of fast food intake among Iranians. Bahadoran et al.¹² have reported the mean consumption of fast foods in their study population as 161 and 108 g/week in young and middle-aged adults. In their study, fast food intake was calculated by summing up the intakes of sausages, salami, hamburger, pizza, and french fries. Reporting fast food intake as g/day does not make sense. Earlier studies have mostly reported fast food intake as frequency per week or servings/week.^{15,16} However, this paper has not clarified the percent of the adult population who were frequent consumers of fast foods. Totally, the study provides limited information on fast food intake among Iranian adults. Furthermore, as the study population has been confined to those living in one district of Tehran, the findings on the amount of fast food intake cannot be extrapolated to other parts of this metropolitan area. Although fast food consumption among Iranians is growing to be an epidemic, well-designed studies are required to provide accurate information on fast food intake.

Fast foods and diet quality: are they interrelated in Iranians?

Bahadoran et al.¹² have reported that high consumption of fast foods was associated with poor diet quality. Earlier studies have frequently reported the same findings. Among participants of USDA's 1994-6 Continuing Survey of Food Intakes by Individuals (CSFII 1994-6), it has been shown that frequent fast food consumers had high intakes of energy and non-diet carbonated soft drinks, but lower intakes of milk, fruits and micronutrients.¹⁷ The same findings have also been reported from other parts of the world.¹⁸⁻²⁰ Adherence to a fast food dietary pattern among Tehrani adolescents has

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also been linked with lower intakes of vitamin C, B vitamins, and dietary calcium.²¹ Of note, in the study by Bahadoran et al.¹² are the figures they have reported for dairy and nutrients such as dietary fiber, vitamin C, folate, and calcium. The average consumption of dairy in their study participants was almost 15 ounce/day. Low consumption of dairy and calcium intake has long been among major nutritional problems in Iran, while consumption of both dairy, calcium and even vitamin C and dietary fiber are above what is recommended in this study. No further study from Iran has reported such figures.

Although fast food consumption has been associated with poor diet quality in Western countries, findings from the study of Bahadoran et al.¹² cannot shed light on this issue among Iranians due to the important above-mentioned ambiguous points. Therefore, additional research is needed to come to a definite conclusion in this regard.

Fast foods as a contributor to cardiovascular risks among Iranians: true or false?

Several factors inherent to fast foods might promote overeating and thereby could increase weight gain and cardiovascular risks. Fast foods are high glycemic index, highly energy-dense foods that contain excessive amounts of dietary fats, salt, trans and saturated fatty acids, and low levels of dietary fiber. Trans fatty acids constitute 23.6% to 30.6% of total fatty acids of fast foods in Iran.²² These dietary components have all previously been related to elevated cardiovascular risks, even among Iranians.²³ In the study by Bahadoran et al.¹² significant, but weak, associations between fast food intake and cardiovascular risk factors were found. Based on their findings, it seems that the relation is age-dependent. Although reporting this association among Iranian adults is new, earlier studies among Iranian adolescents have reached the same results. In a cross-sectional study among Isfahani adolescents, a significant linear association has been shown between dyslipidemia and the frequency of fast food intake.¹⁴ The same finding has also been reported from other countries.^{15,24} An important point in the analysis of Bahadoran et al.¹² are the small, but significant, regression coefficients, which represent weak associations. One might ascribe these significant associations to the study's large sample size. As the authors have acknowledged, due to the cross-sectional design of the study, an assumption of causal relations is impossible. It is not clear why the investigators have not given odds ratios for the risk factors. These points make the findings less interesting and the interpretation challenging for the scientific community. Further information, particularly from prospective cohort studies, is required to support their findings.

Conclusion

Undoubtedly, fast food intake has increased among Iranians in the last decades.²⁵ To what extent fast food consumption contributes to the obesity epidemic and increased prevalence of cardiovascular risks in Iranians cannot be drawn from a single cross-sectional study. Additional data is needed to provide reasonable answers to this question.

References

1. Okrainec K, Banerjee DK, Eisenberg MJ. Coronary artery disease in the developing world. *Am Heart J*. 2004; **148**: 7 – 15.
2. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, et al. INTERHEART Study Investigators. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet*. 2004; **364**: 937 – 952.
3. National Plan of Action for Nutrition: a multi-sector activity coordinated by the National Nutrition and Food Technology Research Institute. Tehran: Shahid Beheshti University of Medical Sciences and Ministry of Health; 1995.
4. Esmailzadeh A, Azadbakht L. Food intake patterns may explain the high prevalence of cardiovascular risk factors among Iranian women. *J Nutr*. 2008; **138**: 1469 – 1475.
5. Azizi F, Salehi P, Etemadi A, Zahedi-Asl S. Prevalence of metabolic syndrome in an urban population: Tehran Lipid and Glucose Study. *Diabetes Res Clin Pract*. 2003; **61**: 29 – 37.
6. Ford ES, Giles WH, Dietz WH. Prevalence of the metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. *JAMA*. 2002; **287**: 356 – 359.
7. Esmailzadeh A, Khosravi Boroujeni H, Azadbakht L. Consumption of energy-dense diets in relation to cardiometabolic abnormalities among Iranian women. *Public Health Nutr*. 2011; **19**: 1 – 8. [Epub ahead of print] doi:10.1017/S1368980011002680
8. Esmailzadeh A, Azadbakht L. Different kinds of vegetable oils in relation to individual cardiovascular risk factors among Iranian women. *Br J Nutr*. 2011; **105**: 919 – 927.
9. Azadbakht L, Esmailzadeh A. Red meat intake is associated with metabolic syndrome and the plasma C-reactive protein concentration in women. *J Nutr*. 2009; **139**: 335 – 339.
10. Esmailzadeh A, Kimiagar M, Mehrabi Y, Azadbakht L, Hu FB, Willett WC. Fruit and vegetable intakes, C-reactive protein and the metabolic syndrome. *Am J Clin Nutr*. 2006; **84**: 1489 – 1497.
11. Esmailzadeh A, Azadbakht L. Legume consumption is inversely associated with serum concentrations of adhesion molecules and inflammatory biomarkers among Iranian women. *J Nutr*. 2012; **142**: 334 – 339.
12. Bahadoran Z, Mirmiran P, Golzarand M, Hosseini-Esfahani F, Azizi F. Fast food consumption in Iranian adults; dietary intake and cardiovascular risk factors: Tehran Lipid and Glucose Study. *Arch Iran Med*. 2012; **15**: 346 – 351.
13. Kelishadi R, Pour MH, Sarraf-Zadegan N, Sadry GH, Ansari R, Alikhassy H, et al. Obesity and associated modifiable environmental factors in Iranian adolescents: Isfahan Healthy Heart Program - Heart Health Promotion from Childhood. *Pediatr Int*. 2003; **45**: 435 – 442.
14. Kelishadi R, Pour MH, Zadegan NS, Kabhazi M, Sadry G, Amani A, et al. Dietary fat intake and lipid profiles of Iranian adolescents: Isfahan Healthy Heart Program—Heart Health Promotion from Childhood. *Prev Med*. 2004; **39**: 760 – 766.
15. Pereira MA, Kartashov AI, Ebbeling CB, Van Horn L, Slattery ML, Jacobs Jr DR, et al. Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. *Lancet*. 2005; **365**: 36 – 42.
16. Anderson B, Rafferty AP, Lyon-Callo S, Fussman C, Imes G. Fast-food consumption and obesity among Michigan adults. *Prev Chronic Dis*. 2011; **8**: A71.
17. Bowman SA, Gortmaker SL, Ebbeling CB, Pereira MA, Ludwig DS. Effects of fast-food consumption on energy intake and diet quality among children in a national household survey. *Pediatrics*. 2004; **113**: 112 – 118.
18. French SA, Story M, Neumark-Sztainer D, Fulkerson JA, Hannan P. Fast food restaurant use among adolescents: Associations with nutrient intake, food choices and behavioral and psychosocial variables. *Int J Obes*. 2001; **25**: 1823 – 1833.
19. McNutt SW, Hu Y, Schreiber GB, Crawford PB, Obarzanek E, Mellin L. A longitudinal study of the dietary practices of black and white girls 9 and 10 years old at enrollment: The NHLBI Growth and Health Study. *J Adolesc Health*. 1997; **20**: 27 – 37.
20. Cusatis DC, Shannon BM. Influences on adolescent eating behavior. *J Adolesc Health*. 1996; **18**: 27 – 34.
21. Azadbakht L, Esmailzadeh A. Dietary patterns and attention deficit hyperactivity disorder among Iranian children. *Nutrition*. 2012; **28**: 242 – 249.
22. Asgary S, Nazari B, Sarrafzadegan N, Parkhideh S, Saberi S, Esmailzadeh A, et al. Evaluation of fatty acid content of some Iranian fast foods with emphasis on trans fatty acids. *Asia Pac J Clin Nutr*. 2009; **18**: 187 – 192.
23. Esmailzadeh A, Azadbakht L. Home use of vegetable oils, markers of systemic inflammation, and endothelial dysfunction among women. *Am J Clin Nutr*. 2008; **88**: 913 – 921.
24. Rudolph TK, Ruempler K, Schwedhelm E, Tan-Andresen J, Riederer U, Böger RH, et al. Acute effects of various fast-food meals on vascular function and cardiovascular disease risk markers: The Hamburg Burger Trial. *Am J Clin Nutr*. 2007; **86**: 334 – 340.
25. Malekzadeh R, Mohamadnejad M, Merat S, Pourshams A, Etemadi A. Obesity epidemic: an Iranian perspective. *Arch Iran Med*. 2005; **8**: 1 – 7.