

OBSERVATIONS

State of Diabetes, Hypertension, and Comorbidity in Kuwait: Showcasing the Trends as Seen in Native Versus Expatriate Populations

The global epidemic of diabetes and related disorders has not spared the states of Gulf Cooperation Council, particularly Kuwait (1,2). Socioeconomic changes in the post-oil era have promoted a sedentary lifestyle and an intake of high-calorie food. Expatriates, who form the workforce, constitute two-thirds of the Kuwait population; migrants are at greater risk of developing diabetes (3). We undertook a retrospective cohort study using nationwide data from the Kuwait Health Network, which integrates records from primary health clinics and hospitals. The dataset, after quality control, includes 270,172 participants comprising natives and expatriates.

Crude prevalence of type 1 diabetes is 2.8% among expatriates and 2.3% among natives (age-group 0–20 years). Asian expatriates (age-group 30–60 years) exhibit higher prevalence of type 2 diabetes (and hypertension) at 33.25% (and 37%) than natives at 25.4% (and 28%). Prevalence of coexistence of diabetes and hypertension is 11%, irrespective of ethnicities. Prevalence increases with advancing age; prevalence of comorbidity increases to 17% in the age-group of 40–70 years, and prevalence of type 2 diabetes in the age-group of >55 years increases to 47.3% in Asian expatriates and 56.3% in natives. Instances of adult-onset type 1 and child type 2 diabetes, in line with worldwide trends (4,5), are increasing in Kuwait. During the last 5 years, 13% of the diabetic population with onset age of <10 years and 42% of that with onset age of 10–20 years have been diagnosed with type 2 diabetes, and 6% of diabetic

young adults with onset age of 20–30 years have been diagnosed with type 1 diabetes.

Mean onset ages for type 2 diabetes and hypertension are lower in Asian expatriates than in natives by 4.6 years (95% CI 4.40–4.88; $P < 0.001$) and 3.44 years (3.18–3.69; $P < 0.001$), respectively. Mean onset age for type 1 diabetes is 14.07 ± 10.85 years (13.4–14.7) among natives; for type 2 diabetes 48.63 ± 12.12 years (48.5–48.8) among natives and 44.00 ± 8.00 years (43.9–44.1) among Asian expatriates; and for hypertension 50.06 ± 14.2 years (49.92–50.20) among natives and 46.60 ± 8.35 years (46.5–46.7) among Asian expatriates. Hypertension-onset age is higher in the diabetic population than in the non-diabetic population, with the difference being most prominent in natives. In 70% of comorbid patients, diabetes precedes hypertension. In up to 30% of comorbid Asian expatriates as opposed to 21% of natives, co-onset occurs within ± 2 years.

Family history, BMI, and sex are established risk factors. As much as 47% of hypertensive, 32% of diabetic, and 44% of comorbid patients have a family history of diabetes and/or hypertension. The higher the BMI, the lower the onset age: mean diabetes-onset age for the class III obese category is lower by 8.2 years (95% CI 5.2–11.2; $P < 0.001$) than that for the normal BMI category. At a given BMI, males have earlier onset of diabetes than females. While females outnumber males among diabetic natives (males:females 43:57), males outnumber females among diabetic Asian expatriates (males:females 70:30). This bias is significantly different ($P < 0.001$) from that seen with the pool of all participants (natives 39:61, expatriates 61:39).

This observational study makes available large-scale national trends on the prevalence of diabetes/hypertension in Kuwait and illustrates how ethnicity affects the trends in different ways. The reported observations have implications for prevention programs in multiethnic societies.

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References

- Alhyas L, McKay A, Majeed A. Prevalence of type 2 diabetes in the states of the co-operation council for the Arab States of the Gulf: a systematic review. *PLoS ONE* 2012;7:e40948
- Alwan A, King H. Diabetes in the Eastern Mediterranean (Middle East) region: the World Health Organization responds to a major public health challenge. *Diabet Med* 1995;12:1057–1058
- Carballo M, Siem F. Migration and diabetes: the emerging challenge. *Diabetes Voice* 2006;51:31–33. Available at http://www.idf.org/sites/default/files/attachments/issue_44_en.pdf. Accessed 22 April 2013
- Pinhas-Hamiel O, Zeitler P. The global spread of type 2 diabetes mellitus in children and adolescents. *J Pediatr* 2005;146:693–700
- Lasserson D, Fox R, Farmer A. Late onset type 1 diabetes. *BMJ* 2012;344:e2827