

REVIEW

Diabetes in Vietnam



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Abstract

BACKGROUND The prevalence for diabetes, prediabetes, and gestational diabetes in Vietnam are low relative to other parts of the world, but they are increasing at alarming rates. These changes have occurred in the setting of economic and cultural transitions.

OBJECTIVES The aim of this study was to provide relevant information depicting the diabetes burden in Vietnam.

METHODS Literature was reviewed using PubMed and local Vietnamese sources, including papers published in the Vietnamese language.

FINDINGS In 2012, the prevalence of diabetes was 5.4% and prediabetes 13.7%. In 2005, the prevalence of obesity was 1.7%. There is a dual burden of over- and undernutrition observed in Vietnam. Diabetes is associated with an increased waist-to-hip ratio despite normal body mass index. Nutritional transitions occurred with increased protein, fat, and fast foods, and with decreased fresh fruits and vegetables. Tobacco use is very high in Vietnam with 66% of adult men currently smoking. Challenges include endocrinology training, health care coverage, patient education, and lack of coordination among government and specialist agencies.

CONCLUSION Diabetes is a growing problem in Vietnam and is associated with obesity, changes in dietary patterns, and other cultural transitions. More research is needed to better understand this health care problem and to devise targeted interventions.

KEY WORDS diabetes, diabetes care, Southeast Asia, type 2 diabetes, Vietnam

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PREVALENCE AND RISK FACTORS

Vietnam is situated in the Southeast Asia region with a surface area of 365,000 km² and a population of approximately 94 million, ranking as the 15th most populous country in the world. The Kinh (Viet) people account for 85% of the population and the Hoa people, from Chinese ancestry, live primarily in the urban area. Other ethnic groups number <1000 and live mostly in remote area and the highlands.^{1,2}

In surveys from the early 1990s, the prevalence of diabetes was 1.01% in Hanoi, 0.96% in Hue, and 2.5% in Ho Chi Minh City (HCMC)—the 3 representative cities in the north, center, and south of Vietnam, respectively.³ In 2008, a survey in HCMC of 720 men and 1421 women using cluster sampling and oral glucose tolerance testing (OGTT) to define diabetes, found that the prevalence was 10.8% in men and 13.2% in women.⁴ HCMC is the largest and most economically developed city in Vietnam and the increased use of

OGTT may explain the relatively higher prevalence rates. The independent risk factors for diabetes in Vietnam were high blood pressure and increased waist-to-hip ratio (WHR).⁴ In 2012, a national survey found the prevalence of diabetes in Vietnam to be 5.4% and impaired glucose tolerance to be 13.7%.⁵ In this survey, diabetes also was more prevalent in big cities and less prevalent in remote areas such as the highlands⁵ with rates of both prediabetes and diabetes accelerating at alarming levels.⁶ In a recent outpatient clinic and hospital-based study, the age of onset of type 2 diabetes (T2D) was in the fourth to fifth decade, with younger onset associated with poorer metabolic control than older onset.⁷

Adherence with diabetes treatments in the 40- to 64-year age group was found to be lower in rural areas than in urban regions, arguing for increased education.⁸ Depression is more likely in men with undiagnosed T2D in Vietnam.⁹ Furthermore, in a cross-sectional study of children and adolescents (age <19 years), glycemic targets of hemoglobin A1c <7.5% were not being met; the barriers to optimal control remain poorly understood in Vietnam.¹⁰

Along with the increase in diabetes in the general population, a survey at a tertiary obstetrical referral hospital in HCMC showed that the prevalence of gestational diabetes using the American Diabetes Association criteria (OGTT with 2 results above cutoff considered positive) was 5.9% in 2011, but increased substantially to 20.4% in 2010–2011 with criteria from the International Association of Diabetes and Pregnancy Study Groups.¹¹

CHANGES IN RISK FACTORS

Since the 1990s, there have been significant economic changes in Vietnam, primarily characterized by a shift from an agricultural- to an industrial-based commerce. This economic transition was accompanied by changes in lifestyle and nutrition and resulted in inequitable distribution of income between urban and rural populations. All of these factors have important implications in the epidemiology of diabetes and cardiometabolic risk factors.

Obesity. The prevalence of obesity in Vietnam is still relatively low, although it has increased substantially during the past decade, particularly over the past 5 years. Using the US criteria for whites (ie, body mass index [BMI] ≥ 30 kg/m²), the prevalence of obesity was 0.4% in 2005, 2-fold higher than the 2000 figure.¹² However, using the Asian criteria (ie, BMI ≥ 27.5 kg/m²), the prevalence of

obesity was 1.7% in 2005, also representing a 2-fold increase from the 2000 figure (Table 1). These increases paralleled ongoing increases in malnutrition, affirming the dual burden of over- and undernutrition in Vietnam, as seen in other developing nations.¹² Moreover, the majority of people with T2D have a BMI <23 kg/m² but increased adiposity reflected by a rise in WHR and associated with chronic overconsumption of high glycemic index foods.^{13,14}

Most Vietnamese epidemiologic studies are restricted to Hanoi, HCMC, and other large cities and their surrounding areas, although a large portion of the population lives in semi-urban or rural areas. For instance, an earlier 1978 survey of people living in the Mekong delta using the World Health Organization's (WHO) "STEPwise approach to surveillance of non-communicable diseases" (STEPS) methodology, found that 1% of men and 1.1% women had high blood glucose (defined as whole capillary blood glucose of at least 6.1 mmol/L); 8.8% of men and 12.6% of women had a BMI ≥ 25 kg/m², and 2.3% of men and 1.5% of women had a BMI ≥ 30 kg/m².¹⁵

Dietary Habits. There has been a major shift in dietary habits that parallel the changes observed in obesity prevalence rates. In 1985, the average intake of protein per individual was 52.4 g/day; this figure was increased to 61.9 $\pm$ 18.6 g/day in 2000 and 74.3 $\pm$ 26.5 g/day in 2010. During the same period, the average intake of lipid increased from 12.8 g/day in 1985 to roughly 24.9 $\pm$ 17 g/day in 2000 and 37.7 $\pm$ 23.4g/day in 2010.¹⁶

Results of the National Nutrition Surveys in 1985 and 2010 showed a profound change in the energy content of food in Vietnam. For example, in 1985, only 6.2% of energy (average total daily calories 1925 kcal) was from lipids, but in 2010 this proportion was increased to 17.6% $\pm$ 8.7% with virtually no change in total energy intake. Energy from carbohydrates decreased from 82.6% in 1985 to 67% $\pm$ 10.2% in 2010.¹⁶ However, the

Table 1. Changes in the Prevalence of Overweight by Various BMI Categories¹²

BMI Category (kg/m ²)	2005 (N = 14,452)	2000 (N = 17,163)
≥ 23 (%)	11.7	16.3
≥ 25 (%)	6.6	3.5
≥ 27.5 (%)	1.7	0.9
≥ 30 (%)	0.4	0.2
BMI, body mass index.		

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