

Prevalence of Diagnosed Diabetes and Related Risk Factors: Japanese Adults in Westchester County, New York

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Following migration to the West, intergenerational increases in the prevalence of diabetes among Japanese have been reported.^{1,2} Diabetes prevalence among second- and third-generation Japanese American adults was considerably higher compared with the rates in Japan.^{3,4} This phenomenon has generated the “Westernization hypothesis,” whereby gradual adaptation of a Western lifestyle, including a high-fat diet and physical inactivity, contributes to an increase in diabetes.⁵

The extent to which the prevalence of diabetes is high among all Japanese populations in the United States and its regional variation are unknown. East Coast Japanese, who tend to be less acculturated newcomers,⁶ are likely to have a different profile of diabetes prevalence and associated risk compared with West Coast Japanese. Information specific to geographically defined ethnic groups is needed to tailor interventions and preventive services. We report the results of a 1999 mail survey of the largest Japanese residential community in New York State.

METHODS

The 1990 census was used to identify 17 zip code areas in southern Westchester County, NY, with the highest concentration of Japanese residents, and these areas were designated as our survey area.⁷ Commercially available telephone directories^{8,9} were used to generate a listing of Japanese households, and 1100 households were randomly selected for the mailing. All adults within the household were invited to participate. The total number of respondents was 911, for a household response rate of 58.0%. Compared with

TABLE 1—Selected Demographic Characteristics of Japanese Adults in Westchester County, NY

Characteristic	All Cases (N = 911)
Mean/Median age, y	43.3/42.0
Mean/Median length of living in the United States, y	8.9/3.9
Male, %	54.8
≥ 2 y college education, %	86.3
Japanese birth, %	95.4
Living in the United States on a temporary basis, %	70.1
English as a native language, %	6.6
Do not speak English at home, %	59.5
Have health care coverage, %	93.2
Had a routine medical checkup within the last 2 y, %	77.7
Had a comprehensive checkup ^a within the last 2 y, %	43.4
Have a particular place to go to for medical care, %	80.9
Own and drive a car, %	98.1

^aComprehensive medical checkup requiring an overnight stay in a hospital equipped with advanced diagnostic machines.

the 1990 Integrated Public Use Microdata Series data,¹⁰ the sample was not significantly different from adult Japanese residents in Westchester County with respect to gender and birthplace, but the participants were slightly older.

The questionnaire was adapted largely from the Behavioral Risk Factor Surveillance System, including the question for identifying physician-diagnosed diabetes.¹¹ English and Japanese versions of the questionnaire were made available following a review by a bilingual focus group. Community preparation and follow-up mailings according to Dillman's methods were used to increase survey cooperation.¹² Gender- and gender-within-age-specific estimates and 95% confidence intervals (CIs) for diabetes and its major risk factors were calculated. Age-adjusted estimates were calculated with the 2000 census as the standard population.

RESULTS

Westchester County Japanese people were predominantly Japanese-born recent arrivals,

TABLE 2—Prevalence of Diabetes and Its Related Risk Factors Among Japanese Adults in Westchester County, NY, by Age and Gender

	All Adults			18–44 y			≥ 45 y		
	Male (n = 499)	Female (n = 412)	P	Male (n = 270)	Female (n = 268)	P	Male (n = 224)	Female (n = 142)	P
Diabetes, % (95% CI)	4.0 (2.5, 6.0)	1.2 (0.4, 2.7)	.010	1.1 (0.3, 3.0)	0.0 (0.0, 1.1)	.084	7.6 (4.6, 11.6)	3.5 (1.3, 7.6)	.111
Overweight, % ^a (95% CI)	27.4 (23.6, 31.5)	4.5 (2.8, 7.0)	<.001	24.5 (19.6, 30.0)	2.7 (1.2, 5.3)	<.001	31.5 (25.6, 37.9)	7.9 (4.2, 13.3)	<.001
Obese, % ^b (95% CI)	1.2 (0.5, 2.5)	0.3 (0.1, 1.2)	.104	1.1 (0.3, 3.0)	0.0 (0.0, 1.2)	.088	1.4 (0.4, 3.7)	0.7 (0.0, 3.5)	.568
Central obesity, US definition, % ^c (95% CI)	0.9 (0.3, 2.3)	0.3 (0.0, 1.4)	.269	0.0 (0.0, 1.3)	0.0 (0.0, 1.3)	NA	2.1 (0.7, 5.0)	0.9 (0.0, 4.2)	.418
Central obesity, Japanese definition, % ^d (95% CI)	15.1 (11.9, 18.7)	1.8 (0.7, 3.6)	<.001	11.8 (8.1, 16.5)	1.3 (0.3, 3.6)	<.001	19.4 (14.2, 25.4)	2.6 (0.7, 7.0)	<.001
Hypertensive, % (95% CI)	11.7 (9.0, 14.7)	4.0 (2.4, 6.2)	<.001	5.7 (3.4, 9.1)	0.4 (0.0, 1.9)	<.001	18.9 (14.2, 24.5)	10.7 (6.4, 16.7)	.037
High cholesterol, % (95% CI)	19.9 (16.5, 23.6)	10.2 (7.5, 13.5)	<.001	16.0 (12.0, 20.9)	3.9 (2.0, 6.8)	<.001	24.9 (19.5, 30.9)	21.4 (15.2, 28.8)	.450
Current smoking, % (95% CI)	29.3 (25.4, 33.4)	7.5 (5.3, 10.4)	<.001	30.4 (25.1, 36.1)	7.8 (5.0, 11.5)	<.001	27.7 (22.1, 33.8)	7.0 (3.6, 12.2)	<.001
Physical inactivity, % (95% CI) ^e	64.1 (59.8, 68.3)	62.1 (57.4, 66.7)	.535	70.4 (64.7, 75.6)	72.8 (67.2, 77.8)	.539	57.1 (50.6, 63.5)	43.0 (35.0, 51.2)	.008
Mean Japanese meals/week	10.1 (9.7, 10.5)	10.0 (9.6, 10.5)	.839	10.2 (9.7, 10.6)	10.0 (9.5, 10.5)	.653	10.1 (9.5, 10.6)	10.0 (9.2, 10.8)	.899

Note. CI = confidence interval; NA = not available.

^aBody mass index ≥ 25.0 .

^bBody mass index ≥ 30.0 .

^cWaist measurement: men > 102 cm, women > 88 cm.

^dBody mass index > 25.0 and waist measurement: men > 85 cm, women > 90 cm.

^eNot participating in any physical activity or exercise that involved at least 20 minutes at a time and occurred at least 3 times per week during the previous month.

many of whom were temporary residents (Table 1). Educational attainment was high, with more than 85% reporting at least 2 years of college education. Socioeconomic status also was high despite a relatively low degree of acculturation, as indicated by Japanese language preference at home.

The prevalence of diagnosed diabetes for Westchester County Japanese adults was 2.7% (95% CI=1.8, 4.0) and lower than 6.5% (95% CI=3.5, 9.5) for all Westchester County adults (unpublished results of pooled 1998–2000 Behavioral Risk Factor Surveillance System). The age-adjusted rates were 4.6% (95% CI=3.4, 6.1) for Westchester County Japanese adults and 6.8% (95% CI=3.7, 9.9) for all Westchester County adults. Gender-specific prevalence was 4.0% for men (95% CI=2.5, 6.0) and 1.2% for women (95% CI=0.4, 2.7) (Table 2). Men 45 years and older had the highest prevalence (7.6%), and women 18 to 44 years had the lowest prevalence (0.0%).

Men were more likely to be centrally obese according to the Japanese definition¹³ and overweight. Men also were more likely to be current smokers and to have high blood pressure and high blood cholesterol. There were no significant gender differences in physical

inactivity and consumption of traditional Japanese meals.

DISCUSSION AND CONCLUSION

The findings of this study show a relatively low prevalence of diabetes among predominantly foreign-born East Coast Japanese residing in Westchester County. This may be attributed, in part, to the leanness of this population. Only 27.4% of the men and 4.5% of women were overweight, compared with more than 55% of US adults.¹⁴ Together with the fact that traditional Japanese meals are consumed frequently, the findings suggest that the negative effect of “Westernization”¹⁵ has not fully affected this population. However, high rates of physical inactivity, smoking, and other related risk factors, particularly among men, raise concerns about the future risk for diabetes and its complications.

Gender differences in diabetes prevalence and its risks have previously been reported in Japan.^{16–18} Japanese cultural norms that expect women to be thin and nonsmokers may have a role. Work-related factors also can place men at higher risk for diabetes. Ninety-three percent of the Westchester County Japanese men worked full time, whereas only

10% of the women did so. Studies in Japan found that work-related stress¹⁹ and managerial occupation²⁰ are linked to higher diabetes prevalence and its risks.

The observed gender differences call for innovative intervention strategies for this population. Worksite physical activities and weight reduction programs are suitable for middle-aged men. US subsidiaries of Japanese corporations, where many Westchester Japanese men work,²¹ can incorporate these programs into their existing employee wellness programs. For women and the elderly, community-based physical activity programs are suggested.

The limitations of this study include those related to mail surveys, self-reporting, and undiagnosed diabetes. Because the levels of health care coverage and use were comparable to those of US adults, we also expect the rate of undiagnosed diabetes to be comparable to the rate of 32% previously reported.²² ■

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Contributors

A.S. Hosler designed and conducted the survey, analyzed the data, summarized the results, and drafted the brief. T.A. Melnik provided guidance in data collection, analysis, and summary presentation and participated in the writing and revision of the brief.

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Human Participant Protection

The survey questionnaire, protocols, and consent forms were approved by the New York State Department of Health institutional review board.

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