

Diabetes Prevalence Among Puerto Rican Adults in New York City, NY, 2000

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This study assessed the prevalence of diagnosed diabetes and associated characteristics among Puerto Rican adults in New York City, NY, with a random-digit-dialed telephone survey with a dual-frame sampling design. Overall, 11.3% (95% confidence interval=8.7%, 14.0%) had diagnosed diabetes; diabetes was significantly related to age, obesity, and family history; and the prevalence was high among those with the least education. This study showed the ability to obtain critically needed diabetes information from ethnic minorities at the local level.

Diabetes is a leading cause of mortality, morbidity, and disability that disproportionately affects US Hispanic persons.¹ Reported diabetes prevalence among the US Hispanic population is approximately twice that of non-Hispanic Whites.² Because the US Hispanic population is heterogeneous, diabetes risk is likely to vary according to the diverse ethnic origins.^{3,4} Puerto Rican persons are the largest Hispanic group in New York City, NY,⁵ and they are among the most assimilated Hispanic persons to the US culture.⁶ However, recent information about diabetes in this population is lacking.^{7,8} This study assessed the prevalence of diagnosed diabetes and associated characteristics among Puerto Rican adults in New York City.

METHODS

Respondents were selected by using random-digit-dialed telephone survey

methodology, which adhered closely to the Behavioral Risk Factor Surveillance System (BRFSS) protocol.^{9,10} A dual-frame sampling design was used to improve design efficiency and reduce costs. One frame sampled telephone exchanges in proportion to the number of Puerto Rican households within New York City census tracts. The other frame sampled New York City telephone numbers with associated Hispanic surnames.

The sample (N= 1304) included New York City residents aged 18 years and older who identified themselves as Puerto Rican as part of the interview to screen for study eligibility. Diagnosed diabetes was assessed by asking the standard BRFSS question: “Have you ever been told by a doctor that you have diabetes?” All respondents reporting diabetes were retained in the sample. Respondents without diabetes were selected at a rate to yield approximately

equal numbers of respondents with and without diabetes in the final sample. The study questionnaire in both English and Spanish languages consisted primarily of BRFSS questions. Questions with respect to birthplace and language were added as indicators of US assimilation.^{11,12} Interviews were conducted from June 1999 through June 2000.

The data were weighted to reflect the probabilities of selection and were poststratified to the age and gender distribution of the New York City Puerto Rican population with the 1990 *Integrated Public Use Microdata Series*, the most recently available source of data.¹³ Diabetes prevalence was calculated with respect to several subject characteristics, and estimates were standardized to the overall age distribution in the population. SUDAAN software for complex survey design was used for variance estimation, age standardization, and statistical testing.¹⁴

RESULTS

Puerto Rican adults in New York City were relatively young and were more likely to be female and of low socioeconomic status as indicated by low educational attainment and high rates of uninsured and Medicaid recipients (Table 1). More than half were born in the United States, and approximately 60% spoke English as the principal household language. The prevalence of overweight and obesity and family history of diabetes was high. A greater proportion of individuals with diagnosed diabetes were older, female, less educated, born in Puerto Rico, Spanish speaking, overweight or obese, and receiving Medicaid and had a family history of the disease.

Overall, 11.3% (95% confidence interval= 8.7%, 14.0%) had diagnosed diabetes (Table 2). Diabetes prevalence increased with age and was higher among those with less education, born in Puerto Rico, living in Spanish-speaking households, with obesity, and with a family history of diabetes. Following age adjustment, diabetes was significantly higher among the obese persons and those with a family history of diabetes. These remained significant when modeled with the other factors.

TABLE 1—Sociodemographic and Health-Related Characteristics of Puerto Rican Adults in New York City, 2000

	Total, % ^a	Diabetes, % ^a	No Diabetes, % ^a
Age, y			
18-44	63.9	28.2	68.4
45-64	27.3	38.9	25.8
≥ 65	8.8	32.9	5.8
Gender			
Male	44.2	39.8	44.8
Female	55.8	60.2	55.2
Educational attainment			
≤ Grade 8	11.1	31.8	8.5
Grades 9-11	33.1	22.2	34.5
High school or general equivalency diploma	21.9	28.5	21.1
Some college or more	33.8	17.4	35.9
Birthplace			
Puerto Rico	46.1	76.3	42.2
United States	52.9	2.4	50.5
Other	1.0	2.4	0.8
Principal household language			
Spanish	39.4	59.5	36.8
English	60.6	40.5	63.2
Weight status ^b			
Underweight or normal	39.2	25.3	41.0
Overweight	41.5	41.0	41.5
Obese	19.3	33.7	17.5
Diabetes family history			
Yes	38.2	60.1	35.5
No	61.8	39.9	64.5
Health insurance			
Medicare	9.2	25.4	7.1
Medicaid	29.0	34.0	28.4
Uninsured	21.0	17.2	21.5
Other insurance	40.7	23.4	43.0

^aWeighted percent. Columns may not add to 100% because of rounding.

^bUnderweight and normal: body mass index (BMI) < 25.0; overweight: 25.0 ≥ BMI < 30.0; obese: BMI ≥ 30.0.

TABLE 2—Prevalence of Diagnosed Diabetes Among Puerto Rican Adults in New York City, by Sociodemographic and Health-Related Characteristics, 2000

	Crude Rate % (95% CI)	Standardized Rate % (95% CI)
Age, y		
18–44	5.0 (2.9, 7.0)	
45–64	16.1 (11.4, 20.7)	
≥ 65	41.8 (21.9, 61.8)*	
Gender		
Male	10.2 (5.6, 14.8)	10.6 (5.8, 15.4)
Female	12.2 (9.9, 14.6)	11.8 (8.3, 15.3)
Educational attainment		
≤ Grade 8	32.4 (23.3, 41.5)*	30.1 (12.5, 47.8)
≥ Grade 9	8.7 (6.4, 11.0)	10.9 (7.2, 14.6)
Birthplace		
Puerto Rico	18.8 (13.3, 24.3)*	13.3 (7.5, 19.1)
United States	4.6 (2.9, 6.3)	7.7 (3.3, 11.1)
Other ^a
Principal household language		
Spanish	17.3 (12.0, 22.7)*	12.3 (8.3, 16.3)
English	7.7 (5.2, 10.2)	10.5 (6.5, 14.5)
Weight status		
Obese ^b	19.1 (13.1, 25.1)*	17.9 (12.3, 23.6)*
Nonobese ^b	9.0 (5.8, 12.1)	9.4 (5.9, 12.9)
Diabetes family history		
Yes	17.2 (11.7, 22.7)*	16.1 (11.7, 20.5)*
No	7.1 (4.5, 9.6)	7.2 (4.7, 16.9)
Health insurance		
Uninsured	9.5 (2.8, 16.2)	10.8 (0.8, 20.7)
Insured ^c	12.2 (9.6, 14.8)	12.0 (4.8, 13.8)
Total	11.3 (8.7, 14.0)	11.3 (8.6, 14.0)

Note. CI = confidence interval.

^aNot reported because sample size was fewer than 50 respondents.

^bObese: body mass index (BMI) ≥ 30.0; nonobese: BMI < 30.0.

^cIncludes Medicare, Medicaid, and other forms of health insurance.

**P* < .05 compared with others.

1984 Hispanic Health and Nutrition Examination Survey.⁸

Diabetes was significantly related to age, obesity, and family history of diabetes and was high among those with the least education. The effect of birthplace and language moderated substantially and became non-significant after age adjustment. Diabetes in this population, therefore, is related to factors typically associated with the disease in the United States.⁸

The limitations of this study include underestimated prevalence because diabetes is frequently undiagnosed.⁷ Second, estimates obtained from telephone surveys also may be biased because of relatively low response rates and underestimated in populations with low telephone coverage.¹⁸ However, the response (45.1%) and cooperation rates (62.8%) from this survey of inner-city minorities were higher than in the statewide 2000 New York State BRFSS (32.9% and 34.7%, respectively).^{19,20} Moreover, the Centers for Disease Control and Prevention has reported that bias in BRFSS data was not associated with response rates.²¹ Finally, 1990 *Integrated Public Use Microdata Series* data may not accurately reflect the current population. As a verification measure, Puerto Rican origin and birthplace of the post-stratified adult sample were compared with findings for all Puerto Rican people in New York City from the 2000 census by county, and no significant differences were found.^{22,23}

Eliminating health disparities and reducing the burden of diabetes in Hispanic communities are major goals for the nation and New York State. The findings will be used to strengthen New York's existing program efforts to create targeted initiatives to reduce the burden of diabetes in Puerto Rican and other Hispanic communities. This survey further shows the ability to obtain critically needed diabetes information at the local level from an urban minority population defined by ethnic origin. Similar approaches can be applied by other states and localities to better understand the extent and distribution of diabetes and risk factors in defined population groups. ■

DISCUSSION AND CONCLUSIONS

The findings in this report indicate a high prevalence of diagnosed diabetes among Puerto Rican adults in New York City. The prevalence of 11.3% reported here is higher than that recently reported for the US Hispanic population (8.0%) and the native Puerto Rican population (9.6%).^{2,15} A diagnosed diabetes prevalence of 35.2%

(data not shown) for those aged 60 years and older in this study is similar to the 34.3% reported for Puerto Rican persons at that age in Massachusetts.¹⁶ Applying the ratio of undiagnosed-to-total diabetes cases of 35%, the total diabetes prevalence approaches 15%.¹⁷ This compares to a reported total diabetes prevalence of 13.4% for New York City–area Puerto Rican persons aged 18 to 74 years from the 1982 to

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Contributors

T. A. Melnik and A. S. Hosler contributed to all aspects of the study, including the conception and design of the study, analysis and interpretation of the data, and drafting and finalizing of the content of the brief. J. P. Sekhobo contributed to the analysis and interpretation of the data and to the drafting and finalizing of the brief. T. P. Duffy contributed to the conception and design of the study and to the finalizing of the brief. E. F. Tierney, M. M. Engelgau, and L. S. Geiss each contributed to the design of the study, interpretation and discussion of the results, and finalizing of the brief.

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Human Participant Protection

The New York State Department of Health institutional review board approved the project as an exemption.

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