Diabetes and its Related Risk Factors Among Russian-Speaking Immigrants in New York State

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Russian-speakers, one of the largest groups of new immigrants in New York, are characterized by high proportions of refugees, and elderly and urban residents. To understand the extent of diabetes and its risks in this population, client data from a large state-wide diabetes prevention program were used. The prevalence of diabetes among Russian-speaking immigrants aged 40 years and older (N=1,008) was 16.9% (95% confidence interval [CI]: 14.6, 19.3). Russian-speaking immigrants also exhibited a high prevalence of obesity, defined by BMI ≥30 (33.2%, 95% CI: 30.4, 36.2), high blood pressure (53.8%, 95% CI: 50.7, 56.8), and sedentary lifestyle (69.8%, 95% CI: 67.0, 72.6). After adjusting for age, these rates were significantly higher (P<.01) than the rates for non-Hispanic Whites in the state. Women, urban residents, those with less than a high school education, and Medicaid recipients, were more likely to be at risk. The literature on Russian immigrants suggests an association between dietary behavior, economic hardship, cultural and linguistic barriers, and less favorable health outcomes. (*Ethn Dis*. 2004;14:372–377.)

Key Words: Diabetes, Obesity, High Blood Pressure, Russian, Immigrants, New York

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Introduction

Diabetes is an increasingly common chronic disease. It is a leading cause of morbidity, mortality, and disability, affecting an estimated 19 million Americans.[1] High prevalence rates of type 2 diabetes, the most common form of diabetes in adults, have been reported among Native Americans, Hispanics, African-American, and Pacific Islanders.[2] While the prevalence of diabetes among non-Hispanic White Americans is relatively low, few studies have been conducted to explore diabetes prevalence among White ethnic groups. However, there are reports indicating that obesity and cardiovascular disease, major risk and co-morbidity factors of diabetes, are prevalent in immigrants from the former Soviet Republics.[3,4] One report found that type 2 diabetes is prevalent among Soviet émigrés residing in Australia.[5] This study was conducted to assess the extent of diabetes incidence and its related risks in Russian-speaking immigrants, one of the largest immigrant populations in New York State. The information generated will be used toward implementing culturally appropriate community intervention programs for controlling and preventing diabetes.

Background: Russian-Speaking Immigrants in New York State

New York State has been the most popular destination for immigrants from the former Soviet Republics, with about one third of immigrants from those areas settling in the state.[6] A sizable wave of Soviet Jewish immigrants arrived in New York in the late 1970s.[7] Since the collapse of the Soviet Union in 1991, the state saw an even larger influx of immigrants.[8,9] During the first half of the 1990s, New York City, alone, received an annual average of around 13,000 immigrants from the former Soviet Republics, making them the second largest immigrant group, after Dominicans.[6,9]

Recent immigrants from the former Soviet Republics are a diverse people, including Christians, Jews, and even a small number of Muslims, and have various ethnic and regional backgrounds. The most common shared characteristic of this group is the Russian language. Due to Soviet-era universal education, immigrants from the former Soviet Republics are all fluent in Russian, even though their mother tongue may not be Russian. Because of this common characteristic, we will refer to immigrants from the former Soviet Republics as Russian-speaking immigrants.

Russian-speaking immigrants have unique sociodemographic characteristics. First, the group comprises a large number of refugees, a category of immigrants admitted on the basis of political or religious persecution in their homeland.[10] From 1990 to 1998, more than 358,000 former Soviet refugees were admitted to the United States, the largest refugee group of that period.[11] New York City, in particular, received a large share of the refugees; between 1995 and 1996, about 85% of new Russian-speaking immigrants were refugees, and represented 82% of the total refugee population in the city.[9] Second, a high proportion of Russian-speaking immigrants are middle-aged and elderly. Soviet-era immigrants, in particular, include a high percentage of older adults,

While the prevalence of diabetes among non-Hispanic White Americans is relatively low, few studies have been conducted to explore diabetes prevalence among White ethnic groups.

Table 2. Healthcare insurance coverage of the Russian-speaking immigrants aged 40 years and over in New York State

Type of Insurance	*N*	%	Mean Age of Insurance Holder
Medicaid alone	706	70.0	64.7
Medicaid and Medicare	131	13.0	73.8
Medicare alone	40	4.0	71.8
Medicare and commercial	21	2.1	72.8
Commercial insurance alone	73	7.2	55.4
No insurance	33	3.3	59.1
Refused	4	0.4	73.8

the result of a Soviet policy requiring émigrés to take their dependent adults with them.[12] The 1990 US Census reported the 2 largest age groups in the Soviet-born US population as those aged 45–65 years (27%), and 65 years and older (25%).[8] Finally, Russian-speaking immigrants have a strong urban preference. Established Russian enclaves and their surrounding communities in New York City attract a large proportion of Russian-speaking immigrants.[7,13] Sample data from the 1990 Census indicated that 93% of Soviet-born individuals in New York State lived in urban areas.[14]

The unique characteristics of Russian-speaking immigrants create potential challenges to the local public health system. A large refugee population increases the demand on publicly-funded health insurance programs, such as Medicaid. A high proportion of older adults means high healthcare utilization and costs, and a high urban concentration adds more burden to resource-poor inner-city clinics, community health centers, and public hospital emergency rooms.

Russian-speaking immigrants may pose an even greater challenge for diabetes care and prevention. Diabetes primarily affects older adults, and many Russian-speaking immigrants fit the high-risk category by their higher average age, alone. In addition, language barriers, unfamiliarity with the American healthcare system, and cultural differences in perceptions of illness, and expectations for health care, create barriers for obtaining appropriate preventive and medical care.[8,12] Russian-speaking immigrants are generally well-educated, with a strong community support structure.[7] Targeted, culturally sensitive intervention is likely to make a positive difference. Information regarding the status of diabetes and its risk factors in this population is needed to assist in tailoring future intervention programs.

Table 1. Demographic characteristics of the Russian-speaking immigrants aged 40 years and over in New York State

Demographic Characteristic		Study Population* (*N*=1,008)	State Population† (*N*=1,726)	*P* Value‡
Age				n.s.
	Range	40–91	40–90	
	Mean	64.6	63.7	
	Median	66.0	65.0	
Gender				n.s.
	Male	42.4%	41.7%	
	Female	57.6%	58.3%	
Residence				n.s.
	Urban	95.4%	93.2%	
	Rural	4.6%	6.8%	
Education				<.001
	Less than HS	32.3%	35.6%	
	High school graduate	17.9%	24.2%	
	Some college or more	49.8%	40.3%	

* The New York State Diabetes Community Coalition Encounter data (1997–1999) for Russian-speaking immigrants from the former Soviet Union, aged 40 years and over.

† The 1990 IPUMS 5% New York State data for persons aged 40 and over who were born in the former USSR and spoke Russian at home.

‡ Based on the *z* test (mean age comparison) and the chi square test (other variables). The level of significance is $P<.01$.

METHODS

Between March 1997 and April 1999, the New York State Department of Health (NYSDOH) selected and funded 41 community-based diabetes coalitions, comprising various public health agencies, healthcare providers, and non-profit community organizations, across New York State. The main purpose of the funding was to plan and implement community-based programs to reduce the incidence of diabetes and its complications among adult popula-

Table 3. Prevalence of diabetes and its related risk factors among the Russian-speaking immigrants aged 40 years and over in New York State, by gender

	Male (*N*=427)		Female (*N*=581)		Total (*N*=1,008)	
	%	95% CI	%	95% CI	%	95% CI
Diagnosed diabetes	14.3	11.2, 17.9	18.8	15.7, 22.1	16.9	14.6, 19.3
Overweight*	68.1	63.6, 72.4	73.5	69.8, 77.0	71.2	68.4, 74.0
Obese†	20.8	17.2, 24.9	42.3	38.4, 46.4	33.2	30.4, 36.2
High blood pressure	50.4	45.6, 55.1	56.3	52.2, 60.3	53.8	50.7, 56.8
Little or no exercise	67.2	62.7, 71.5	71.8	68.0, 75.3	69.8	67.0, 72.6

* Body Mass Index (BMI) ≥25.0.
† BMI ≥30.0.

tions, with a strong emphasis on reaching out to disadvantaged individuals. The coalitions were required to submit client data to the NYSDOH for program evaluation and feedback. The data included self-reported demographic information, language use, height and weight, health insurance, and information regarding diabetes, high blood pressure, and exercise.

Client data were used to identify Russian-speaking immigrants, based on their reported place of birth (any former Soviet Republic), and Russian spoken at home as the primary or secondary language. Because over 95% of the clients were aged 40 years or older, the small number of those aged less than 40 years were removed from this study. A total of 1,008 individuals were identified as Russian-speaking immigrants aged 40 years and over, or about 3% of all clients. Since the data used were derived from a subset of a client population sample, they were compared with Census data to check its representativeness. The 1990 Census 5% IPUMS data for persons aged 40 years and over, who were born in the former USSR, and spoke Russian at home, were used for comparison.[14] There were no statistically significant differences in terms of the distribution of age, sex, and place of residence (urban or non-urban); however, the sample was more educated (Table 1). The data set was deemed to be adequately representative for further analysis.

Descriptive statistics (percent ± 95% confidence interval) are reported for the total sample, and by gender for demographics, health insurance status, and diabetes and its related health indicators (overweight, obesity, high blood pressure, and exercise). Diagnosed diabetes was measured by self-report, as an affirmative response to the question, "Have you ever been told by a doctor that you have diabetes?"[15,16] Women reporting gestational diabetes were not considered to have diabetes for the purpose of this study. For the assessment of overweight and obesity, body mass index (BMI) was calculated from self-reported height and weight without shoes. High blood pressure was assessed by self-report of high blood pressure diagnosis by a physician. The prevalence rates of diabetes and diabetes risk factors were age-adjusted using the 1990 New York State population, and compared to the age-adjusted prevalence rates for non-Hispanic Whites and African Americans, based on data from the New York State Behavioral Risk Surveillance System (BRFSS). The chi-square test was conducted to test statistical differences. The significance level of $P<.01$ was used throughout the study. Finally, odds ratios were assessed for the relationship of diabetes and its related health risks to demographic factors and insurance coverage.

RESULTS

As previously observed, Russian-speaking immigrants were highly urban-

Table 4. Comparisons of the age-adjusted prevalence of diabetes and its related risk factors among the Russian-speaking immigrants, non-Hispanic Whites, and non-Hispanic Blacks aged 40 years and over in New York State

	A Russian-Speaking Immigrant (*N*=1,008)	B Non-Hispanic White* (*N*=3,793)	C Non-Hispanic Black† (*N*=995)	*P* Value‡	
				A×B	A×C
Diagnosed diabetes	16.7	7.2	13.4	<.001	n.s.
Overweight§	71.5	56.2	68.7	<.001	n.s.
Obese‖	34.1	18.8	26.2	<.001	<.001
High blood pressure	54.2	31.5	43.4	<.001	<.001
Little or no exercise	67.8	53.8	66.5	<.001	n.s.

Note: Age adjusted for the 1990 New York State population.
* New York State BRFSS, 1997–1999.
† New York State BRFSS, 1996–2000.
‡ Based on the chi-square test. The level of significance is $P<.01$.
§ Body mass index (BMI)≥25.0.
‖ BMI≥30.0.

Table 5. Odds ratio of diabetes and its related risk factors by demographic characteristics among Russian-speaking immigrants aged 40 and over in New York State

	Diagnosed Diabetes	Overweight (BMI≥25)	Obese (BMI≥30)	High Blood Pressure	No or Little Exercise
Age					
65+	1.09	0.86	0.77	1.09	1.85†
40–64	1.00	1.00	1.00	1.00	1.00
Sex					
Female	1.39	1.39	2.55†	1.27	1.25
Male	1.00	1.00	1.00	1.00	1.00
Residence					
Urban	1.68	3.11†	1.86	1.25	2.76*
Rural	1.00	1.00	1.00	1.00	1.00
Education					
Less than HS	2.50†	0.90	1.13	1.56	1.85†
High school	1.10	0.77	1.10	0.92	0.90
Some college +	1.00	1.00	1.00	1.00	1.00
Insurance (a)					
Medicaid	1.70	1.52	1.46	2.58†	3.21†
No Medicaid	1.00	1.00	1.00	1.00	1.00
Insurance (b)					
Medicare	1.08	0.60*	0.70	0.88	0.95
No Medicare	1.00	1.00	1.00	1.00	1.00

* $P<.01$; † $P<.001$.

Compared to non-Hispanic Whites of the same age in the state, Russian-speaking immigrants had significantly higher prevalence rates of diabetes, overweight, obesity, high blood pressure, and physical inactivity.

ized, with 95% residing in urban areas (Table 1). They were generally well-educated, with nearly 50% having at least some college education. Nearly 85% of the study population had Medicaid coverage, either alone (70.0%), or in combination with Medicare (13.0%) (Table 2). Those with commercial insurance tended to be younger and live outside New York City. Only a small percentage (3.3%) had no coverage.

The overall prevalence of diabetes was 16.9% for the sample (Table 3). Diabetes prevalence for women (18.8%) was higher compared to men (14.3%), but the difference was not statistically significant. The prevalence of overweight (BMI≥25) and obesity (BMI≥30) were 71.2% and 33.2%, respectively. Women were more likely to be obese than men, with 42.3% reporting being obese, compared to 20.8% in men. The prevalence of high blood pressure and sedentary lifestyle (getting little or no exercise) was 53.8% and 69.8%, respectively, with non-significant differences by gender.

Compared to non-Hispanic Whites of the same age in the state, Russian-speaking immigrants had significantly higher prevalence rates of diabetes, overweight, obesity, high blood pressure, and physical inactivity (Table 4). Russian-speaking immigrants also had significantly higher prevalence rates of obesity and high blood pressure, compared to New York State's non-Hispanic Blacks, after age-adjustment.

Finally, patterns emerged in the association of diabetes and its related risk factors to socioeconomic and insurance factors among Russian-speaking immigrants. Women, those living in urban areas, those with less than a high school education, and Medicaid recipients, were generally more likely to be at risk compared to others (Table 5). For instance, Medicaid recipients were more than 3 times as likely to be sedentary, and 2.5 times more likely to have high blood pressure, compared to non-Medicaid recipients. Urban residents were also approximately 3 times more likely to be overweight and sedentary than rural residents. Those with less than a high school education were 2.5 times more likely to have diabetes than those with some college education, or a high school education. Women were also 2.5 times more likely to be obese than men.

DISCUSSIONS

Despite their White racial background, the prevalence of diabetes in Russian-speaking immigrants was high, and comparable to the rates of other non-White groups known to be at risk for diabetes, which is consistent with reports indicating the population's increased risks for obesity, high blood pressure, and diabetes.[3–5] Studies have also reported that former Soviet Republics are experiencing increasingly high prevalence rates of obesity, particularly among women,[17,18] and their death rates from cardiovascular disease are among the highest in Europe.[19]

Several explanations have been presented to explain the high rates of diabetes and its related risks among Russian-speaking immigrants. Diet is the most frequent explanation, as Russian-speaking émigrés tend to consume large quantities of carbohydrates[5] and high fat

foods.[8] Animal products are scarce and expensive in their homelands; therefore, Russian-speaking immigrants do not practice trimming fat from meat, or removing the skin from chicken. They also do not use low fat dairy products, preferring heavy cream or sour cream, and using lard generously in their cooking [personal conversation with a Russian physician]. In addition to unhealthy dietary habits, Russian-speaking immigrants, particularly men, tend to smoke and drink heavily and do not exercise regularly.[8] Some argue that hopelessness and powerlessness associated with the hardship of new life in the United States make them continue their unhealthy lifestyle.[8]

Russian-speaking immigrants with diabetes face other barriers in controlling the disease. Of those with diagnosed diabetes in our sample (N=170), 64% had no or limited knowledge of the hemoglobin A_{1c} test. In contrast, only 11% of the state's general population with diabetes had no, or limited, knowledge of the test [unpublished results of the analysis of 2001 NYS BRFSS data]. There is a report that Russian-speaking immigrants with diabetes tend to have more impaired function, greater difficulty coping with the disease, and poorer overall health, compared to Whites or African Americans with diabetes.[12] In fact, the lack of knowledge about diabetes among diabetes patients is fairly common in the former Soviet Republics.[20] Insufficient knowledge of diabetes care, economic hardship, language barriers, and unfamiliarity with the American healthcare system, are likely to be associated with their poor outcomes of diabetes.[8,12]

To improve diabetes-related health outcomes among Russian-speaking immigrants, small but important steps have been taken in New York State. Russian communities are known for their strong, cohesive community structures, and cultural emphasis placed on learning, therefore, community-based intervention focusing on the development of a healthy lifestyle, and increasing knowledge of diabetes, is likely to make a positive impact. Increasing numbers of Russian-speaking healthcare providers, providing Russian-specific cultural competency training to clinical staff, and developing dietary guidelines incorporating Russian diets, are also needed to improve health outcomes of the population.

Finally, the limitations of this study include those related to self-reporting and undiagnosed diabetes. The BRFSS-based instruments used in this study to solicit reporting of diagnosed diabetes and its risks are widely-used instruments with good reliability and validity[21]; therefore, self-reporting bias is expected to be minimal. For the general US population, undiagnosed diabetes is estimated to be about 35% of all cases of diabetes,[1] but Russian-speaking immigrants may have a higher undiagnosed proportion, due to under-utilization of medical care. Despite these limitations, this study provided valuable information on diabetes-related risks in a hard-to capture White ethnic group, increasing in number, and in diabetes prevalence.

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