A Community Study of Language Concordance in Russian Patients with Diabetes

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Purpose: Unique challenges exist in the provision of culturally and linguistically appropriate health care to ethnically diverse populations. The purpose of this study was to improve the metabolic control of Russian patients with diabetes through increased attention to language and cultural concordance between the provider and patient.

Procedures: This is a retrospective cohort study of 55 Russian immigrant type 2 patients with diabetes to assess levels of glycemic, lipid, and blood pressure control before and after the arrival of a bilingual Russian internist trained in both the United States and Russia. Paired *t* test was used to compare these parameters before and after the bilingual Russian provider joined our practice.

Findings: Overall, the mean low density lipoprotein (LDL) level decreased by 20% from 126 mg/dL to 102 mg/dL ($P=.0002$) respectively before and after the Russian provider began treating these patients. Mean hemoglobin A_{1c} decreased from 8.4% to 8.0% ($P=.007$), and diastolic blood pressure was reduced from 82.7 mm Hg to 76.3 mm Hg ($P=.0002$). Systolic blood pressure also improved from 143.2 mm Hg to 140.6 mm Hg ($P=.3$). At the end of the study period more than 90% of the patients with diabetes were appropriately taking lipid-lowering medications and an angiotensin converting enzyme (ACE) inhibitor.

Conclusion: Our findings suggest that it is important to facilitate the health care of ethnically diverse minority populations in a manner that attempts to maximize language and cultural concordance. These potential benefits will assume an even greater importance with the expansive growth of ethnic minorities in the United States and their unique healthcare needs. (*Ethn Dis.* 2004;14:584–588)

Key Words: Blood Pressure, Diabetics, Glycemic, Hyperlipidemia, Russian

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Introduction

With the burgeoning growth of racial ethnic minorities in the United States, healthcare systems will increasingly require effective strategies to treat their chronic diseases while considering these patients' unique language and literacy needs.[1,2] Differential access to healthcare services, whether due to cost, language, or discrimination has been implicated as a possible partial explanation for the striking racial ethnic differences in healthcare outcomes.[3–5] More than 30 million people living in the United States speak a language other than English at home, and this increasing trend is expected to continue. According to the US Department of Health and Human Services, African Americans make up half of the US minority population, with the remaining half composed of Asian Americans, non-White Hispanics, Native Americans, and a new emerging population of Russian immigrants from the Commonwealth of Independent States, formerly known as the Soviet Union.[6]

Russian immigration to the United States has increased over the past decade, with an approximate one million Russian immigrants living in the United States today. Between 1991 and 1998, there were 472,000 Russian immigrants admitted as permanent residents under the Refugee Relief Act.[7] This ethnic minority is known to be markedly affected by chronic cardiovascular diseases, which may be even more problematic since these conditions might worsen as they acculturate to American eating habits. According to the *1997 Heart and Stroke Statistical Report,* Russians have the highest death rate from cardiovascular disease compared to all other major countries in the world. Similarly, a recent study reported that the life expectancy of Russian men was the lowest of all nationalities and had fallen from 62 to 58 years since 1980.[8] Indeed, our previous study of Russian immigrants living in Denver demonstrated a large burden of cardiovascular illness in these new immigrants.[9] Given the fact that there has been a major ingress of Russian immigrants to the United States during the last 15 years, and members of this ethnic group have many chronic diseases and cardiac risk factors, culturally sensitive medical care must be provided to optimize their health outcomes.

Previously, we have described the fact that equivalent degrees of glycemic control can be achieved in monolingual and bilingual Hispanic patients with diabetes if there is language concordance in the patient-physician partnership.[10] Therefore, we decided to investigate the effect of language and cultural concordance on metabolic control in a cohort of Russian-immigrant type 2 patients with diabetes who receive health care through Denver Health, the only vertically integrated public healthcare system in the city and county of Denver, Colorado.

Methods

Patient Population

Russian patients in this study received health care through Denver Health, which includes Denver Health Medical Center, an urban, 500-bed hospital and ambulatory care center, and 10

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Section 330 federally funded community health centers, serving primarily minority, low-income patients throughout metropolitan Denver. Approximately 50% of the Denver Health community health center patients are Hispanic, 27% White, 18% African Americans; Russians, Native Americans and Asians each constitute about 1% of the patient base. Nearly half of the study patients lack any form of medical insurance, and the majority of the remainder receive health insurance through Medicaid or Medicare. In our hospital system, however, low income does not preclude the ability to access care because the Colorado Indigent Care Plan (CICP), a state-funded program for adults ineligible for Medicaid and who lack private health insurance, uses an affordable income-based sliding scale to determine copay requirements and prescription costs to the patient. Most of the remaining patients were rated CICP.

Study subjects were identified through a computer search of administrative databases with the following selection criteria: age between 30 and 79 years, recorded Russian ethnicity, diagnosis of type 2 diabetes mellitus (ICD-9 CM code 250.00), with at least 2 Denver Health system visits between 1997–2002, at least one primary care visit before 1997 (baseline measure before language concordance) and a minimum of 2 separate serum hemoglobin A_{1c} (HbA_{1c}) tests performed during those visits. This blood test provides information about the average blood glucose level during the preceding 120 days. Patients being seen at least twice in the outpatient setting helped to ensure inclusion of established patients and not newly enrolled patients. Russian ethnicity is an accurate proxy for Russian immigrant status at Denver Health and indicates inability to converse in English. These patients were immigrants mainly from Moscow, St. Petersburg, and the Ukraine with a small number of Georgians and Uzbeks. Chart review corroborated this inability to converse in English. After 1997, the primary care provider for each patient was Dr. I.P., a Russian-born, dually Russian- and American-trained internist. She had immigrated from Russia in 1992 after living there her entire life. Given that she was highly fluent in Russian, there was a concordance in spoken language and culture between Dr. I.P. and her Russian patients. A review of the administrative database was also performed to identify the family practice or internal medicine provider who had seen the patient during the year preceding Dr. I.P.'s arrival at Denver Health. Exclusionary criteria were: patients with type 1 diabetes mellitus by diagnosis on the administrative database, corticosteroid-induced hyperglycemia, and patients without 2 available HbA_{1c} values from 1997–2002. Patients younger than 30 years of age were excluded to avoid potential misclassification of type 1 diabetes mellitus, and those older than 79 years of age were excluded as the need for achieving optimal glycemic control might be considered less important. The Denver Health quality assurance/diabetic registry defines standard monitoring as at least 2 HbA_{1c} levels per year in all patients with diabetes.

Study Design

This was a retrospective cohort study to assess levels of glycemic, lipid, and blood pressure control in Russian immigrant patients before and after the arrival of a dually trained, bilingual Russian internist. The latest one or 2 HbA_{1c} levels were utilized and the last one or 2 before her arrival. Patients who fulfilled inclusion criteria had their medical charts reviewed as recorded in the electronic medical records imaging system. Additional information was obtained from administrative and laboratory databases. Laboratory databases provided HgA_{1c} test results (normal range: 4.0–6.0%), and lipid panel results, while administrative data sets provided patient demographics and visit-specific information (date, clinic site, frequency, provider, and diagnosis). Chart review provided other pertinent clinical information including blood pressure readings and medication history.

Statistical Analysis

The primary statistical analyses were performed using SAS version 8.1 (Cary, NC). We used a paired *t* test to compare glycemic, lipid, and blood pressure control in Russian subjects who had these outcomes measured both before and after the arrival of the bilingual Russian provider. A 2-sided *P* value of $<.05$ was considered statistically significant.

RESULTS

There were 55 subjects with diabetes out of a total of 319 Russian patients in the entire cohort. Of the 55 patients with diabetes, 46 also had hypertension and 40 also had hyperlipidemia. There were 32 females and 23 males. At the time of their last clinic visit, 80% were between 51 and 79 years of age (Table 1), and the average age of the entire population was 65.4 years. The vast majority of the patients were taking oral agents, a few were taking insulin and one was taking both agents. The cohort had between one and 6 internal medicine clinic visits per year.

Overall, there was a significant im-

Table 1. Characteristics of Russian diabetic patients

Characteristics	*N*	%
Males	23	41.8
Females	32	58.2
Age, years		
30–50	11	20
51–79	44	80
Insulin	5	9
Oral agents	51	91
Hypertension	46	83.6
Hyperlipidemia	40	72.7

Table 2. Paired comparisons of outcomes measured immediately before and immediately after the arrival of a Russian provider

Outcomes Measures	*N*	Before Mean (SD*)	After Mean (SD*)	Paired *t* Test *P* Value
LDL, mg/dL	39	126 (34.6)	102 (31.9)	.0002
HbA_{1c}, %	55	8.4 (1.5)	8.0 (1.6)	.007
Diastolic BP, mm Hg	51	82.7 (11.0)	76.3 (11.0)	.0002
Systolic BP, mm Hg	51	143.2 (22.6)	140.6 (20.2)	.3

* SD = standard deviation.

provement in the levels of glycemic, lipid, and blood pressure control after the language concordance intervention was put into effect (Table 2). Specifically, hemoglobin A_{1c} levels decreased from 8.4% to 8.0% (P=.007), and LDL cholesterol decreased by 20% from 126 mg/dL to 102 mg/dL (P=.0002). In a similar fashion, diastolic blood pressure was reduced from 82.7 mm Hg to 76.3 mm Hg (P=.0002). There was also a trend toward improvement in systolic blood pressure as it was lowered from 143.2 mm Hg to 140.6 mm Hg (P=.3). At the time of the last recorded clinic visit with Dr. I.P., 36 of the 40 hyperlipidemic patients with diabetes (90%) were taking lipid-lowering medications, and 43 of the 46 (93%) patients with hypertension were being treated with an angiotensin converting enzyme (ACE) inhibitor. There was no gender difference in these favorable outcomes.

DISCUSSION

Our results, in a cohort of Russian patients with diabetes, demonstrate that efforts to maximize language and cultural concordance between patients and their healthcare team can translate into substantive improvements of important metabolic risk factors, in both males and females. Many recent studies have underscored the fact that aggressive lipid, blood pressure along with glycemic control are particularly beneficial in type 2 diabetic patients. Every 1% reduction in mean A_{1c} was associated with a 14% reduction in myocardial infarction and 37% decrease in the risk for microvascular complications in the UK prospective Diabetes Study (UKPDS).[11] Similarly, in the Hypertension Optimal Study (HOT), the subset of patients, who were diabetic and randomized to the treatment goal of a diastolic blood pressure less than 80 mm Hg, experienced a 51% reduction in major cardiovascular events.[12] Studies indicate that a decrease of as little as 2 mm Hg in mean diastolic blood pressure substantially reduces the risk of diseases associated with hypertension.[13] Moreover, recent analyses of subpopulations with diabetes in lipid-lowering trials revealed that there was an especially robust cardiovascular benefit from lipid-lowering in these patients[14] as well as from the just published subset of patients with diabetes in the Heart Protection Study.[15] This may be even more relevant to Russian patients with diabetes since health care, as previously provided by the Russian state, was very limited; primary preventive medicine practices were virtually unknown.[16] Similarly, many Russians who had chronic health problems in their homeland, bought medications from the black market, paying a premium for them, and are therefore reticent to forgo them even in the United States. These learned behaviors were deemed necessary to ensure receipt of care in Russia.[17]

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Therefore, the confluence of these factors might beget a strained and difficult relationship between an unselected provider and these patients. It has become increasingly clear that race ethnicity is associated with consistent patterns of healthcare utilization and health outcomes, with minority groups frequently experiencing a substantial disadvantage. Russians with diabetes report poorer overall health than other racial ethnic minorities.[18] Ethnic minorities desire a form of health care which emphasizes their cultural determinate.[19] Physicians must possess special skills to engage their patients in health care, and to effectively educate them about their diseases in a culturally sensitive manner.[20] From our previous work with Russian patients at Denver Health, we found this group to be highly educated, albeit of poor socioeconomic status in the United States.[9] Russia has the highest incidence of cardiovascular disease in the world.[21]

Prior to 1997, we as a healthcare system were faced with a rapidly expanding indigent and difficult-to-care-for Russian patient population, who presented multiple difficult non-clinical issues which interfered with providing quality health care. Therefore, we actively pursued the recruitment of a native Russian-speaking physician who could more efficiently treat this population in a linguistically and culturally appropriate manner.

There are abundant data to suggest that attention to these type of sociocultural and language proficiency issues does positively affect the outcome of healthcare for racial ethnic minorities. Hispanic adults have been found to have a lower use of antihypertensive medications compared to Whites and this finding is not due to economic measures, specific health behaviors or subjective health status.[22] Previously, we have shown that Hispanic patients often revert to obtaining advice from Curanderos with regard to their medical problems.[23] Similarly, a recent review of Vietnamese immigrant health issues emphasized the unique challenges and difficulties in effectively engaging these patients in health care.[24] Ethnic comparison of attitudes and beliefs about cigarette smoking reveal substantial differences in attitudes and beliefs.[25] Nonheritable, potentially modifiable factors that are related to sociocultural issues, may account for much of the excess decline in renal function in African-American patients with diabetes.[3] There are also significant ethnic differences in basic screening modalities such as mammography.[26]

Yet, despite this litany of data which mandates the provision of culturally and linguistically appropriate healthcare interventions, physicians, in general, are ill-prepared to face the challenges of providing quality care to socially and culturally diverse populations.[27] Our study, along with others, confirm the importance of patient-physician racial concordance to achieve better health outcomes. This begs the difficult policy question of how to provide larger racial ethnic subgroups of patients with a physician from the same cultural background.[28]

This study has some limitations. First, these data may not be generalizable to other racial ethnic minorities. However, in light of the expanding evidence, which irrefutably supports the importance of being sensitive to racial ethnic differences in the provision of health care, our data which supports the value of linguistic and cultural concordance, are not easily dismissed. Second, it is not possible to ascertain from our study whether the improvements in the cardiovascular risk factor profile in our cohort of Russian patients with diabetes was primarily due to the language or to the cultural concordance. This limitation, while real, is not a major one since there is evidence that each parameter is important, and achieving either or both is a laudable and important goal. Third, without the use of a control group it is conceivable that the noted improvements are due to an independent system-related/operational improvement at our hospital or increased acculturation by these patients and not due to the physician-patient concordances. While a randomized controlled trial would be the best scientific method of evaluating the effect of the intervention, this is not an imminently feasible study. Even a non-randomized cohort study with an intervention and non-intervention group (Russian patients cared for by a non-Russian physician) would be difficult to perform since the Russian patient strongly prefers their Russian physician. It seems unlikely that these results are solely a consequence of a pre-existing secular trend or acculturation-operational progress since acculturation does not occur at a fixed rate and our overall clinical operation did not undergo any significant modifications during this time period. Similarly, there were no new medications for blood pressure, or for glycemic or lipid control added to our formulary during the study years. It seems very unlikely that the improvements in the measured variables are simply due to chance variability in the measurements. Lastly, one could postulate that in an indigent population, a lack of health insurance impeded access to care and the Russian physician simply facilitated access to care. This is unlikely to explain the favorable trends we observed since all patients studied either were insured through a governmental plan or had affordable care available to them through the Colorado indigent care program, both before and after her arrival.

In summary, our study underscores the potential benefits of additional research being directed at a better understanding of the impact of racial ethnic diversity on health outcome. As the foreign-born population continues to increase in the United States, this will assume even greater importance within the wider social context of healthcare delivery systems. Attempting to maximize physician-patient linguistic and cultural concordance, may be a most reasonable place to start in this quest.

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