Comparison of Utilization of Dental Care Services Among Chinese- and Russian-Speaking Immigrant Elders

Bei Wu, PhD, Thanh V. Tran, PhD, Galina Khatutsky, MS

Abstract

Objective: *The purpose of the study was to identify factors predictive of use of dental services among Chinese- and Russian-speaking immigrant elders.* ***Methods:*** *The data for this analysis were collected from the 1997 survey "Assessing public health and health care needs of Russian-speaking elderly immigrants." A similar survey was replicated among Chinese-speaking elderly immigrants in 2000. Community-based samples of 300 Russian elders and 177 Chinese elders were recruited for the study.* ***Results:*** *Chinese elders used dental care services at lower rates than Russian elders. Education, length of stay in the US, social support, and smoking behavior were significant predictors for the use of dental services among Chinese. However, among Russian elders, age, income, and denture use predicted utilization of dental services.* ***Conclusions:*** *Although Chinese- and Russian-speaking elders have similar immigrant experiences and share the same geographic location and urban setting, the two groups have different patterns of dental service use. These differences may be due to differences in socio-demographic characteristics, values, attitudes and knowledge of oral health and dental care, and unique cultural backgrounds.*

Key words: Chinese-speaking immigrant elders, Russian-speaking immigrant elders, dental care services, and oral health

Introduction

The majority of older Americans do not receive sufficient oral health care, although oral health is an important component of overall health and quality of life among elders. The lack of both public and private dental care insurance is universal, and untended dental health needs are a fact of life for American elders (1-3).

This study examines the utilization of dental services among elderly Chinese- and Russian-speaking immigrants living in a complex urban community on the East Coast of the United States. Although both groups face many common barriers, such as language barriers and acculturation adjustment, and are learning to navigate the health care system in the United States, earlier studies on Chinese- and Russian-speaking immigrant elders found that they have very different patterns of health services utilization. While Russian-speaking immigrants seem to use health services extensively, Chinese elders tend to underutilize available health care (4, 5). A comparison study of dental service utilization between these two distinct groups of elderly immigrants can offer insight into cultural differences that influence oral health status and behaviors among these populations and lead to various levels of utilization.

The use of dental services has been the focus of several studies that found age and gender to be significant factors affecting service use. While some studies find no significant relationship between age and the frequency of dental visits (6), others suggest that the number of dental visits decreases with age among older adults (7-9). Other studies, including those conducted in China, also suggest that elderly women are more likely to visit dentists than men (10, 11).

Lack of financial resources is one of the primary reasons for insufficient dental care. Dental care requires substantial out-of-pocket expenses in addition to insurance premiums and co-pays. So it is expected that people with a higher income and education are more likely to use dental services (12-14).

Previous studies also show that enrollment in Medicaid and Medicare affects dental services utilization. While the literature suggests that elders with Medicaid have a higher utilization of general medical services, (e.g., physician visits and hospital use), they often demonstrate a low use of dental services given the limited Medicaid coverage (9, 12). Kassab *et al.* (13) found that low-income elders with Medicare are less likely to visit a dentist in comparison to people with private insurance.

Some studies indicate that respondents with poor health status and more chronic conditions receive fewer dental services and have greater unmet dental care needs (9,12,15). While some studies found that denture use was positively related to dental visits (16, 17), others suggested it related to less visits to dentists (18). In addition, risk behaviors, such as smoking, appear to be a factor for declining oral health and has been strongly associated with periodontal disease and tooth loss (19, 20). Risky behaviors can compromise a person's ability to visit a dentist or tolerate needed treatment (21). Nonsmoking individuals were found to have a

Send correspondence and reprint requests to: Bei Wu, PhD., Center on Aging and Department of Community Medicine, West Virginia University, PO Box 9127, Morgantown, WV 26506. Phone: (304) 293-5206; Fax: (304) 293-2700; E-mail: bwu@hsc.wvu.edu. Dr. Tran is affiliated with the School of Social Work, California State University at Los Angeles. Ms. Khatutsky is affiliated with RTI International. Acknowledgement: This study was supported by a grant from the Charles. H. Farnsworth Trust of the Medical Foundation. The authors would like to thank the editor and two anonymous reviewers' valuable comments and suggestions. Manuscript received 3/17/2004; returned to authors for revision 6/10/2004; accepted for publication 9/10/2004.

higher number of dental visits (8,9). Although ethnicity and cultural heritage also influence dental health behavior and service utilization, some ethnic groups are rarely included in research studies. A few existing studies indicate that, compared to other ethnic groups, Asians were less informed about oral diseases, held more negative attitudes toward dental care, and scored lowest on oral health self-efficacy (22,23). Persson *et al.* (24), in a study of 295 low-income elders in the Seattle area, found that Asians have worse periodontal conditions than other ethnic minority groups. Asians residing in the United States represent quite a heterogeneous group, consisting of many ethnicities. About one-third of all elderly Asians in the US are Chinese, and most Chinese elderly are foreign-born immigrants (25).

Another growing community in the United States has been established recently by immigrants from the former Soviet Union, who arrived in great numbers after the collapse of the communist government and subsequent liberalization of their country's immigration policy (26). The majority are ethnic Jews who came to the US as political refugees fleeing anti-Semitism and religious persecution. Immigration and acculturation status are considered influential factors for dental care utilization. Qiu & Ni's study (14) found that US-born Asians were more likely than their foreign-born counterparts to have seen a dentist in the past 12 months. The use of health services by immigrant populations can be affected by a host of demographic, cultural and language factors. The survey covered such domains as self-reported general health status and chronic conditions, emotional and mental health, use of health services, health behaviors, living arrangements, social support networks, and demographics. Chinese and Russian versions of the instrument were translated from English by two bilingual and bicultural social gerontologists. The translation was also reviewed and evaluated by experts and pre-tested to assure cultural equivalence (26,27). Kiyak *et al.* (23) suggested that foreign-born elders rated themselves at greater risk for tooth loss and periodontal disease than US-born elders. For immigrants, the length of residence in the US is one of the important contributing factors of dental care services utilization. The likelihood of seeing a dentist tends to increase with length of residence in the US (14).

Due to the lack of research on the use of dental services among Chinese or Russian immigrant elders, this study aims to identify factors predictive of use of dental services by these two groups.

Methods

Data collection. The data for this analysis were collected from the 1997 survey "Assessing public health and health care needs of Russian-speaking elderly immigrants." A similar survey was replicated among Chinese-speaking elderly immigrants in 2000. We collected data from convenience samples of 300 community-dwelling Russian-speaking and 177 Chinese-speaking immigrant elders in the Greater Boston area. Prospective respondents were identified at various social service agencies, elder housing, and social and religious institutions. The Chinese-speaking elders were originally from Mainland China (including Hong Kong), and Taiwan. The Russian-speaking elders emigrated from the former Soviet Union, which now comprises Russia and former Russian republics. The survey consisted of a self-administered questionnaire in Chinese and Russian languages.[1]

Measures. *Dependent variable.* Respondents were asked about visits to multiple health providers, including a dentist. The dependent variable Dental Visit was created by coding 1 if respondents indicated having visited a dentist in the past 12 months.

Independent variables. To model the use of dental care services, we selected a set of independent variables that were found to be important predictors in other studies, including demographics, insurance coverage, physical and mental health, social support and risk behaviors.

Socio-demographic characteristics included age, gender, living arrangements, education, income, length of stay in the US, and limitations in spoken and written English language. Age was scored in a continuous format. Gender was coded 1 for female and 0 for male. Living arrangement was coded 1 for living alone and 0 otherwise. Education was coded 1 for individuals with a college degree and above, 0 otherwise. Annual household income was coded 1 for $10,000 and above, and 0 otherwise. The survey also measured income satisfaction by asking respondents to rate their financial situation from 1 for not satisfied to 5 for extremely satisfied. The length of stay in the country was determined by the number of years in the US. English language proficiency was rated by indicating whether language barriers create problems in the following activities (1 for Yes; 0 for No): shopping, transportation, communicating with neighbors or grandchildren, traveling, going to a bank, using healthcare services, watching television, or participating in leisure activities.

Insurance flags included Medicare, Medicaid, and private insurance coverage.

Physical health measures included several variables: self-rated health, number of chronic conditions, functional limitations and emotional problems, and use of dentures. Self-rated health was coded from 1 for poor to 5 for excellent. A scale for chronic conditions (ranging from 0-12) was created by asking respondents about health problems that limited their activities: arthritis, back/neck problems, eye/vision problems, hypertension, difficulties with walking, hearing loss, bone fractures, lung/breathing problems, heart disease, diabetes, stroke, and cancer. Denture use was coded as 1 for users, and 0 for nonusers.

Functional limitations were measured by asking whether their health limits respondents in 1) lifting or carrying groceries, 2) climbing several flights of stairs, 3) climbing one flight of stairs, 4) bending, kneeling, or stooping, 5) walking more than a mile,

6) walking several blocks, 7) walking one block, and 8) bathing or dressing. A code of 1 was assigned to each activity if respondents answered "yes, limited a lot" and "yes, limited a little"; 0 represented no limitation. The Functional Limitation score was calculated by combining reported limitations. A high score represented higher functional impairment.

Emotional problems were measured by asking whether depression and emotional problems limit respondents' everyday activities. The item was coded 1 if respondents answered "yes" and 0 otherwise.

Social support included frequency of seeing friends and family members and was measured by asking how often they saw their children or other close relatives. This variable was coded from 1 to 5, with a high score representing more family contacts. The frequency of seeing friends was coded similarly.

Two measures were devised to assess the health behavior of elderly immigrants in the study. A dummy variable was created to flag self-reported smokers. Propensity to exercise was coded 1 for people who exercised on a regular basis (2-3 times a week or more) and 0 for those reporting no regular exercise.

Data analysis. In addition to the use of descriptive and bivariate statistics, we examined use of dental services by estimating a logistic regression to test the variables affecting the use of dental services. Given that only 1% of Russian elders had private insurance and 96% of them had Medicaid, these variables are not included in the comparison analysis.

Results

Descriptive analysis. *Dental Visits.* Table 1 describes the results for the comparison of dental visit rates by age categories between Chinese and Russian elders. The third column presents the 1999 National Health Interview Survey (NHIS) numbers as a reference point (28).

In general, Chinese immigrant elders reported much lower rates of dental visits (47%) than their Russian counterparts (60%). These rates are also low when compared with that of the urban resident sample in the NHIS. In our study, 28% of Chinese elders aged 60 to 64 had used dental services in the last 12 months, 54% fewer than their Russian counterparts and 38% fewer than a national sample. In the group aged 65 to 74, 52% of Chinese elders visited dentists compared to 67% of Russian elders and 59% of the NHIS sample. Chinese and Russian elders had a similar rate for dental visits (49%) at ages 75 and above, which is still 5% fewer than the national average. With the exception of the oldest adults (aged 75 and above), Russian respondents reported a higher proportion of dental visits than the national average.

TABLE 1
Percentage of dental visits by Chinese immigrant elders, Russian immigrant elders, and elders from a US national survey

Variable	Chinese Sample (N=177) Percentage	Russian Sample (N=300) Percentage	National Health Interview Survey* Percentage
Age group (years)			
60-64	27.6	71.9	65.5
65-74	51.6	67.4	59.3
75 plus	49.1	48.8	54.4
Total	46.9	60.3	

*Data source: Urban residents from National Health Interview Survey, 1999. Cited from Vargas, *et al.* (26).

Sample characteristics. Table 2 includes the description of sample characteristics and percentage/mean and standard deviation for each variable. In addition, statistical differences between Chinese and Russian samples with p-values are presented for each variable.

Socio-demographic characteristics. The socio-demographic characteristics are significantly different between Chinese and Russian immigrant elders in the study. The mean age for the respondents in the Chinese sample was 72 years old. Sixty two percent of Chinese elders were female, and 30% lived alone. Twenty seven percent reported having a college degree or higher education, and 62% reported an annual household income of $10,000 or above. Forty-six percent of Chinese elders reported being satisfied or extremely satisfied with their financial situation. On average, respondents had immigrated to the US 18 years ago, and the majority (82%) reported English language difficulties as a barrier in performing their daily activities.

Compared to the Chinese respondents, Russian immigrant elders were older (73 years old), and fewer of them were female (50%). Fewer were living alone (25%), although the difference was not statistically significant. Compared to Chinese seniors, Russian elders were more highly educated, with 85% having at least a college degree. However, their average household income was much lower and only 6% reported a household income of $10,000 or above. Consequently, only about a quarter of Russian elders were satisfied with their financial situation. The average length of stay for Russian immigrants was seven years, and an overwhelming majority of them (92%) reported having at least one English limitation.

Insurance coverage. Sixty-two percent of the Chinese immigrant elders had Medicare, half had Medicaid coverage, and close to 10% had private insurance. In contrast, a much higher percent of Russian elders had Medicaid (96%), but fewer had Medicare (53%). Only one percent had private insurance coverage.

Health status. Chinese immigrant elders reported better overall health than their Russian counterparts. Fifty-six percent of Chinese elders rated their physical health as excellent, very

TABLE 2
Descriptive analysis of the sample characteristics

Variable	Chinese Sample (N=177) Mean/percentage	Russian Sample (N=300) Mean/percentage	P
Sociodemographics			
Age (years)	71.8	73.3	<.01
Female	62.2%	50.0%	0.01
Living alone	30.5%	25.0%	NS
Education (college degree or above)	26.6%	85.3%	<.01
Income			<.01
under $ 10,000 a year	66.3%	93.7%	
$10,999 to $14,999 a year	12.1	4.3	
$15,000 to $ 19,999 a year	8.4	0.0	
$20,000 to $ 29,000 a year	4.2	0.3	
$ 30,000 a year and over	9.0	1.7	
Financial satisfaction			<.01
Not satisfied	5.1%	3.0%	
Not very satisfied	18.1	14.3	
Moderately satisfied	31.1	55.2	
Satisfied	37.3	23.7	
Extremely satisfied	8.5	3.7	
Length of stay in the US (years)	18.4	7.0	<.01
English limitations affecting activities	81.9%	92.0%	<.01
Insurance Coverage			
Medicaid	49.7%	96.3%	<.01
Medicare	61.6%	53.3%	0.08
Private insurance	9.6%	1.0%	<.01
Physical Health			
Self-rated health			<.01
Excellent	3.4%	0.0%	
Very good	22.0	0.0	
Good	30.5	7.7	
Fair	37.9	68.3	
Poor	6.2	24.0	
Number of chronic conditions	2.2	4.8	<.01
Functional limitations	2.9	5.1	<.01
Use dentures	59.7%	74.3%	<.01
Self-reported emotional problem	9.0%	46.3%	<.01
Social Support			
Seeing friends			<.01
Don't have friends	0.6%	3.3%	
Less than once a month	14.7	5.0	
At least once every two weeks	9.0	11.0	
At least once a week	24.3	19.0	
2-4 days a week	21.5	26.7	
Everyday	29.9	36.0	
Seeing family members			<.01
Not applicable	0.0%	2.7%	
Less than once a month	19.8	9.0	
At least once every two weeks	10.7	20.7	
At least once a week	19.8	36.0	
2-4 days a week	14.7	11.3	
Everyday	35.0	16.7	
Live together	0.0	3.7	
Health Behavior			
Smoker	5.1%	7.3%	NS
Exercise regularly	82.5%	59.7%	<.01

good, or good, but only 8% of Russian respondents rated their health as good. On average, the number of chronic conditions for Chinese and Russian elders was 2.15, and 4.75 respectively. In terms of functional limitations, the average was 2.92 for Chinese elders and 5.09 for Russians. In addition, 14% more Russians than Chinese had dentures. Russian elders reported poorer mental health status in comparison to their Chinese counterparts. Nine percent of Chinese reported having emotional problems compared to 46% among Russians.

Social support. Chinese and Russian immigrants had comparable social support in the study. Seventy-six percent of Chinese had at least weekly contact with their family. Similarly, 81% of Russians reported the same. The majority of respondents saw their friends on a weekly basis (69% and 70% respectively).

Health behavior. Some significant differences were found in health behavior. Chinese elders were more likely to exercise regularly than their Russian counterparts (82% and 60%). A small number of respondents in the study were smokers—about 5% among Chinese and 7% among Russians.

Logistic regression results. Table 3 describes the logistic regression models predicting dentist visits for Chinese and Russian immigrant elders. Odds ratios and 95% confidence intervals are presented in the table.

Chinese sample. Four factors emerged from the model predicting dental visits among Chinese immigrant elders. Education, length of stay in the US, social support, and smoking behavior were significant predictors for the use of dental services. Among the socio-demographic characteristics, education was the significant factor for dental visits. For Chinese elders who had a college degree or above, the likelihood of seeing a dentist in the previous 12 months was 261% higher than for those without a college degree. Length of stay in the US was also a strong predictor in the model. With each additional year of stay in the US, the likelihood of seeing a dentist increased by 7%. A

TABLE 3
Logistic regression analysis results for dentist visit in the previous 12 months

Variable	Odds Ratio (95% Confidence Interval) Chinese Sample (N=177)	Russian Sample (N=300)
Sociodemographics		
Age	1.02 (0.96, 1.09)	0.95 *(0.91, 0.99)
Female	0.90 (0.40, 2.06)	0.70 (0.40, 1.22)
Living alone	1.10 (0.42, 2.88)	1.34 (0.72, 2.50)
Education (college degree or above)	3.61†(1.51, 8.63)	0.65 (0.30, 1.38)
Income ($10,000 or above)	1.23 (0.49, 3.11)	0.29 *(0.09, 0.95)
Financial satisfaction	0.73 (0.48,1.12)	1.00 (0.69, 1.44)
Length of stay in the U.S.	1.07 ‡(1.03, 1.11)	1.07 (0.99, 1.15)
English limitations affecting activities	1.83 (0.68, 4.91)	0.75 (0.25, 2.24)
Insurance Coverage		
Medicare	1.40 (0.53, 3.70)	0.94 (0.48, 1.82)
Physical Health		
Self-rated health as good	0.67 (0.27, 1.66)	0.71 (0.24, 2.16)
Total number of chronic diseases	0.85 (0.66, 1.10)	0.90 (0.77, 1.05)
Functional limitations	0.92 (0.77, 1.10)	0.93 (0.81, 1.07)
Use dentures	0.89 (0.43, 1.87)	0.26 ‡(0.12, 0.53)
Self-reported emotional problem	0.79 (0.17, 3.61)	1.49 (0.86, 2.59)
Social Support		
Seeing friends	3.45 †(1.34, 8.88)	1.21 (0.61, 2.41)
Seeing family members	0.58(0.25, 1.36)	1.24 (0.70, 2.19)
Health Behavior		
Smoker	0.10 *(0.01, 0.78)	0.48 (0.18, 1.26)
Exercise	0.47 (0.17, 1.27)	0.71 (0.42, 1.22)
Model Chi-Square	49.31	47.64

*$p<.05$; †$p<.01$; ‡$p<.001$; 2-tailed test

higher frequency of social interaction resulted in a greater likelihood of receiving dental care. Smoking behavior was found to be a barrier to seeking dental care. For those Chinese elders who smoked, the likelihood of seeing a dentist was 90% lower than for those who were not smokers. Socio-demographic variables, insurance coverage, physical health and health behaviors were not associated with a likelihood of dental visits.

Russian sample. Very different factors such as age, income, and denture use, predicted use of dental services among Russian seniors. For each additional year of age, the odds of dental care visits decreased by 5%. Income was found to be negatively associated with the use of dental services. Elders with an annual household income $10,000 or above were 71% less likely to see a dentist than those with incomes below $10,000. Denture use was strongly associated with dental care visits. The likelihood of seeing a dentist was 74% less for those with dentures than for those without. Medicare coverage, social support, and health behavior were not significant predictors for dental care visits.

Discussion

In this study, we found that Chinese elders used dental care services at significantly lower rates than Russian elders and the national norm. This rate of dental visits is consistent with the study conducted among Chinese immigrants elsewhere. In a recent survey in the UK, 47% of Chinese adults reported having visited a dentist in the previous 12 months (29). Russian elders in our study, except for older respondents, had a higher rate of dental visits than the national level.

The findings suggest that acculturation, which is measured in this study by length of stay in the US, may have a stronger effect on Chinese-speaking elders' dental services use than their Russian-speaking counterparts. Length of stay in the US was a significant predictor of use of dental services for Chinese, but not for Russians. This appears to be one of the major reasons that accounts for Chinese elders' low use of dental care services. Consistent with Qiu & Ni's (14) findings based on the 1997-2000 National Health Interview Survey, the results of this study reveal that the use of dental services increased with longer stay in the US. Recent Chinese immigrants may have limited oral health knowledge, which is not enough to compel them to see a dentist. They may lack knowledge on how to obtain services. In addition, they may be uncomfortable or afraid to see a dentist. In China, many people don't consider seeing a dentist a preventive measure. Oral health services are oriented to respond to a demand for urgent treatment (30). According to the Second Chinese National Oral Health Epidemiological Survey conducted between 1995 and 1996, only 20% of elders between ages 65 and 74 had visited a dentist in the previous 12 months. Of these, only 0.8% were for regular and preventive oral health care (31). These attitudes and values may have more influence on recent immigrants than on those who immigrated a long time ago. In this respect our findings are consistent with previous studies indicating that attitudes and values influence the use of dental care services more than simple cost barriers (7).

Interestingly, frequency of seeing friends was a significant predictor of the use of dental care services among Chinese elders. Presumably, elders who have more contacts with friends are more likely to be aware of their dental conditions, and have more

knowledge about the availability of and access to dental services through peer referrals.

For Chinese immigrant elders in the study, having a higher income did not lead to greater use of dental services. Instead, higher educational levels and a longer stay in the US predicted the use of dental health services. This outcome differs from findings for the general population which suggest that income is one of the primary reasons for dental service use. It is possible that some recent Chinese immigrant elders may be able to afford dental care, but they do not realize the need to seek care on a preventive basis. Therefore, this phenomenon reflects a process of acculturation for desired dental care behaviors. Although English limitations on activities did not have a direct significant effect on the use of dental care services, language difficulties and the lack of access to information may still be deterrents to use of dental services (29).

Despite their low income and high prevalence of denture use, the study found that Russian-speaking elders have a much higher rate of dental services utilization than Chinese-speaking elders. Findings suggest that education is one of the important factors influencing dental services utilization. Compared to Chinese-speaking elders, Russian-speaking elders have much higher levels of education (an overwhelming majority of the respondents achieved a college degree or above), but lower income. Most likely, people with higher education levels tend to be more knowledgeable and aware of the importance of preventative dental hygiene and the urgency of taking care of dental problems.

Surprisingly, income was found to be negatively associated with dental visits among Russian-speaking elders. This is very different from previous findings. Since few (1.7%) of Russian elders had income at $15,000 or above, the findings suggest that low income Russian elders with Medicaid are more likely to have dental visits than those at marginal poverty levels but without Medicaid coverage. The majority of the Russian respondents (over 95%) were Medicaid enrollees due to their low income in conjunction with a refugee status. As there was too little variability with Medicaid status in the sample, we could not include it in the model as an explanatory variable. Nonetheless, income variable more or less served as a surrogate for Medicaid coverage variable. Unlike other acute health services covered by Medicaid, presently dental care requires significant out-of-pocket expenses. However, Medicaid coverage for dental care in Massachusetts declined only recently and was much more extensive in the mid 90s when the data was collected. The presence of Medicaid coverage for some dental services may partially explain higher utilization among Russian-speaking elders.

Age has a different effect on Chinese- and Russian-speaking elders. As shown in the descriptive analysis, utilization increased with age among Chinese until they reached 75 years old. It is expected that dental health-related problems increase with age. Since there is no other dental health-related information available in the sample, no further analysis to better understand this relationship can be conducted at this point. Age was a significant predictor of dental care use for Russian-speaking elders but not for Chinese elders. The percentage of Russian elders seeing a dentist decreased greatly after they reached age 75. This is especially true for people who rely on public transportation to reach health care providers. In addition, the gradual decline in dental care services utilization with increasing age may be somewhat attributable to an increasing rate of edentulousness and with less perceived need for dental care services. Therefore, having dentures may diminish their inclination to seek dental care. Since no studies are available on dental care use among Russian immigrant elders, no further explanation can be explored in this study.

Several data limitations of this study need to be acknowledged. The survey only asked about a dental visit in the past 12 months and did not request detailed information on the purpose of the visit (e.g. routine dental examination preventive services, restorative procedures); thus, use of dental services does not necessarily indicate a better oral health status. On the contrary, it may indicate a need for more dental care to further improve oral health. Since the study involves nonrandom, community-based samples recruited through Chinese and Russian service organizations, churches, and elderly housing, any attempts to generalize this study's findings should be interpreted with caution. In addition, this study was conducted in Boston, a city with quite an extensive network of ethnic health care providers, who are often conveniently located near public transportation. Thus the conclusions drawn from the study may not be applicable to other areas. Moreover, all physical and mental health data are self-reported and not verified against medical records.

In conclusion, although Chinese and Russian immigrant elders are in the same geographic locations and similar urban settings, the two groups have different patterns of dental service use. In addition to factors captured in the model, these differences may also be due to the distinct cultural backgrounds. In China, only working people who reside in urban areas have health insurance, and dental care is not a part of the health insurance package. People are reluctant to make extra dental visits as they have to pay out-of-pocket. In the former Soviet Union, where dental care is a part of national health insurance, people are accustomed to seek dental care more frequently. Other socio-demographic characteristics, values, and attitudes, as well as knowledge of oral health and dental care also play an important role in determining how often people seek dental care.

Recommendations for future research include conducting more research on oral health care among immigrant groups and including more oral-health-related variables. It is also important to include attitude- and knowledge-related questions. Large representative and longitudinal stud-

ies are needed to further explore factors that predict the use of dental health services among special populations. Recommendations for practice include outreach and education to immigrant populations about the need for preventive dental care and providing easy access to services with language assistance.

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