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Geriatrician and Other Physician Disciplines as the Usual Source of Care for Rural and Urban Older Adults: 2004-2010 Medical Expenditure Panel Survey

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Abstract

The purpose of this study is to examine the trend of usual source care (USC) rates and the discipline of choice among rural and urban older adults. Data used in this study were obtained from 2004 to 2010 Medical Expenditure Panel Survey. The yearly percentages of having a specific discipline as the USC were demonstrated from 2004 to 2010. The association of residence with likelihoods of having any of these three physician categories as USCs was assessed holding other individual characteristics constant. The overall sample size is 24,834, of which 20.0% of older adults resided in rural areas. A similar percentage of older adults living in urban areas had USCs than that of rural areas (93.69% vs. 93.46%). Overall, family practitioners were the most common USC noted in this survey while geriatricians are the least. The urban older adults are more likely than the rural ones to have geriatricians as their USC. Geriatrician discipline receives the most intensive education and training to care for older adults. The growing aging population makes it imperative to address the crisis of geriatrician shortage.

Introduction

Like those in other developed countries, the US population is aging.[1] Data from the US Census Bureau indicate that 40 million people were more than 65 years old in 2010; this number is expected to reach 72 million (20.3% of the total population) by 2030.[2] Because young adults have migrated disproportionately from rural to urban areas for education and employment, the percentage of older people in rural areas is even higher than that nationally.[3] The most current data shows that 11.9% of people in metropolitan areas (urban counties of 50,000 people and more) were 65 years and older.[4] The corresponding figure was 14.6% in micropolitan areas (rural counties with an urban core population of 10,000 to 49,999 plus surrounding counties that are linked through commuting ties), and 16.3 % in noncore areas (rural counties not classified as metro or micropolitan areas).

The rapidly growing aging population has been accompanied by an increase in the prevalence of chronic diseases, functional disabilities, and polypharmacy.[5] About 80 % of older adults have at least one chronic condition such as diabetes, and 50 % have at least two. Nearly half of rural Americans report having at least one major chronic disease such as hypertension.[6] Due to isolation and traditional caregiver responsibilities, approximately 40% of rural older adults are depressed or anxious compared to only 13-20 % of urban women.[7] The percentage of people 65 years and older with a physical disability has also increases from 38.2 % to 46.6 % in association with the increasing level of rurality (from the most urbanized to most rural area).[8]

The increasing number of older adults (65 years and older) in the US and worldwide makes a compelling demand for access to geriatricians.[9] These specialists have been specifically trained in health care for older adults. They are certified either by the American Board of Family Medicine (ABFM) or American Board of Internal Medicine (ABIM) before fulfilling the subspecialty requirements to be certified as geriatricians.[10]

However, Peterson and colleagues noted that there were 1.48 geriatricians per 10,000 older residents (≥65) in most urban counties (county in metro area of 250,000 to 1 million population) and only 0.8 in most rural counties (nonmetro county with urban population of 20,000 or more, not adjacent to a metro area).[11] The corresponding numbers declined from 27.39 to 3.85 for internist-patient ratio and from 22.02 to 14.27 for family physician-patient ratio. In addition, minimal information is known about the actual use of geriatrician services. Information is insufficient on the geographically comparative use of geriatricians, family practitioners, and internists as a usual source of care (USC) for older adults.

The purpose of this study is to examine the trend of USC rates and characteristics of people who used geriatricians or other physicians (family practitioners or general internists) as their USCs. The 2004-2010 Medical Expenditure Panel Survey (MEPS) databases were used for this analysis. Emphasis was given to the geriatricians because of their focused training and competency development with the health of the aged. Family practitioners or internists were also participants of this research because elders commonly receive care from these physician disciplines and they have the potential to be trained to become geriatricians. The research findings were expected to yield data on the provision of geriatric care to the burgeoning aging population in rural and urban America.

Methods

The study was a secondary data analysis over a 7-year period that compared the percentages of rural populations using family practitioners, internists, or geriatricians as their USCs.

Data Source. Data used in this study were obtained from 2004 to 2010 Medical Expenditure Panel Survey (MEPS). The data before 2004 were not used because of the lack of geriatrician information. The MEPS collects data from a nationally representative sample of household but excludes people who are in the military, institutions, or living outside the United States. In particular, it offers national estimates of the level and distribution of health care access and expenditures.

A new panel of the MEPS sample households in each year is obtained from the previous year's National Health Interview Survey (NHIS) sample.[12] The MEPS collects cost and utilization information that was not see in NHIS. Within each panel, the same household and non-institutionalized individuals are interviewed 5 times across 2 years. In each calendar year, AHRQ compiles data from three rounds of the first panel and three rounds of second panel. The overlapping panel design facilitates the combination of data sets from 2 different panels to acquire a larger sample size for each year. For example, the file for the year 2004 consisted of data obtained in Rounds 3, 4, and 5 of Panel 8 and Rounds 1, 2, and 3 of Panel 9.

The individuals and households interviewed vary from panel to panel. The MEPS uses a stratifying, clustering, multiple-stage, and disproportionate sampling design to determine the survey subjects.[13] This complex sampling starts with selecting geographic primary sampling units (PSUs). Then several strata within each PSU are identified for random sampling. The MEPS oversamples two racial/ethnic minority groups including African Americans and Hispanics to ensure adequate sample size. To provide nationally representative estimates, the MEPS generates sampling weights and uses the Taylor-series linearization method to estimate standard errors. For missing values, the MEPS conducts weighted hot-deck imputation procedures for each medical event.

Each MEPS panel has three major components: (1) the household component (HC), (2) the medical provider component (MPC), and (3) the insurance component (IC). The response rates to the MEPS-HC were about 57-63% but more than 90% for both MEPS-MPS and MEPS-IC.[14] The MEPS-MPC was not designed to yield national estimates but served as an imputation source to supplement missing values in the MEPS-HC. In this study, we used the consolidated files (a combination of HC, MPC, and IC) from 2004 to 2010 to estimate the percentages of people having USCs. The unweighted sample size of each panel ranged from 30,964 in 2007 to 36,855 in 2009. After removing people younger than 65 years old and people who did not report their residence, the remaining sample ranged from 3,249 in 2008 to 3,759 in 2006.

Sampling Weights. The 2004-2010 MEPS data (seven years) was used for this study. Seven sampling weights were generated and employed in different year to produce national estimates.[15] Stratum and PSU variables were also generated by MEPS to reflect the complex sampling design.

Dependent Variables: Usual Source of Care. The USC variables were used to reflect older people's access to three types of physicians: geriatricians, family practitioners, and general internists. A senior adult or his/her family member stated whether this senior had a person or a place they usually went to when being sick.[16] If the answer was yes for having a healthcare professional as the USC, the respondent was further asked what type of healthcare professional their USC they used. Three categories of specialty are family practitioners, general internists, and geriatricians. Other disciplines like chiropractor or nurse practitioners were classified into one single category. As a result, each person only had one of six choices: had no USC, chose one facility (e.g. hospital or clinic) as the USC, chose one geriatrician as the USC, chose one family practitioner as the USC, chose one general internist as the USC, and chose any other professional as the USC. The yearly percentages from 2004 to 2010 were then calculated by the following equations:

$$\text{Percentage of Older Adults Who Had no USC} = \frac{\text{Number of Older Adults Who Did Not Have a USC}}{\text{Total Number of Older Adults}} \quad (1)$$

$$\text{Percentage of Older Adults Who Had Facilities as the USC} = \frac{\text{Number of Older Adults Who Had Facilities}}{\text{Total Number of Older Adults}} \quad (2)$$

$$\text{Percentage of Older Adults Who Had Other Professionals as the USC} = \frac{\text{Number of Older Adults Who Had Other Professionals}}{\text{Total Number of Older Adults}} \quad (3)$$

$$\text{Percentage of Older Adults Who Had Family Practitioners as the USC} = \frac{\text{Number of Older Adults Who Had Family Practitioners}}{\text{Total Number of Older Adults}} \quad (4)$$

$$\text{Percentage of Older Adults Who Had General Internists as the USC} = \frac{\text{Number of Older Adults Who Had Internists}}{\text{Total Number of Older Adults}} \quad (5)$$

$$\text{Percentage of Older Adults Who Had Geriatricians as the USC} = \frac{\text{Number of Older Adults Who Had Geriatricians}}{\text{Total Number of Older Adults}} \quad (6)$$

Each percentage of each population in each year generated a value. Six types of percentages (five aforementioned equations) and two types of populations (rural or urban) formed twelve trend lines across from 2004 to 2010. Next, a new dependent variable with three exclusive categories: (1) family medicine (FM), (2) internal medicine (IM), and (3) geriatric medicine (GM), was generated to indicate a respondent's choice.

Independent Variable: Geographic Factor. The independent variable of this study was each respondent's living area defined dichotomously in the MEPS. Urban areas or metropolitan areas

were counties containing at least one urbanized area (population more than 50,000 or more habitants).[17] The Office of Rural Health Policy (ORHP) defined all other areas as rural areas.

Covariates: Individual Characteristics. We selected eight individual characteristics that are suggested by literature to be related to the selection of usual source of care.[18] Except for gender and health insurance, other variables in the MEPS were reclassified in our study to prevent small numbers in one cell. Demographic factors included age (65-69, 70-74, 75-79, 80 and older), gender (male/female), and race (Hispanic, non-Hispanic Black, non-Hispanic White, and others such as Asian). Socioeconomic factors were education (lower than high school, high school diploma, higher than high school), health insurance held (had any private insurance, public insurance only, uninsured), and time needed to reach their usual source of care regardless of transportation methods (less than 15 minutes, 15-30 minutes, 31-60 minutes, 61 minutes and above).[19] Health-related factors included perceived physical health status (fair or poorer, good, very good or better) and perceived mental health status (fair or poorer, good, very good or better) of each respondent.

Analyses. This study merged seven consolidated files and compared the aggregated results between urban and rural population. First, descriptive analyses for both rural and urban older adults were provided to characterize this study sample. Second, bivariate analyses were conducted to compare individual characteristics of people with the USCs by residence. Third, a line chart was used to demonstrate the 2004-2010 trend of using three different types of physicians as USCs. Fourth, a multinomial logistic regression model was performed to assess the association of residence with the likelihood of having any of these three physician categories as USCs, holding other individual characteristics constant. All statistical analyses were done using Microsoft Excel and Stata 12.[20] Two-tailed p values less than or equal to 0.05 were considered statistically significant.

Results

The final data was constituted by seven data sets (2004-2010) and each data set accounted for a similar portion from 13.7% to 15.1%. After applying the sampling weight values, the overall sample size is 24,834 (weighted N= 257,626,496), in which 20.0% of older adults resided in rural areas (weighted n= 51,463,647). A similar percentage of older adults living in urban areas had USCs than that of rural areas (93.69% vs. 93.46%).

Among rural older adults (Table 1), people with USCs were more likely than people without USCs to be younger than 80 years old (75.4% vs. 61.5%), be non-Hispanic Whites (90.0% vs. 83.2%), have private insurance coverage (55.6% vs. 39.6%), and have better mental health conditions (57.7% vs. 49.0%). Other factors have no significant differences between rural people with and without USCs. Urban older adults with USCs were more likely than urban people without USCs to be younger than 80 years old (73.7% vs. 66.5%), be female (58.0% vs. 53.3%), be non-Hispanic White (78.5% vs. 71.1%), have degree higher than high school (22.4% vs. 16.2%), have private insurance plans (54.8% vs. 40.7%), perceive good physical health (44.9% vs. 40.7%) and perceive very good mental health conditions (61.1% vs. 50.9%). People without USCs had no answers about the distance to their USC so that this variable was not reported in the Table 1.

Table 1. Weighted Rural-Urban Comparisons of Individual Characteristics in People with and without Usual Source of Care (USC)

	Rural		Urban		Total	
	No USC N=5,503,158	**Had USC N=45,960,489**	**No USC N=22,032,215**	**Had USC N=184,130,634**	**No USC N=27,535,373**	**Had USC N=230,091,123**
Demographic Factors						
Age						
65-69	25.8%	30.3%	29.3%	29.3%	28.6%	29.5%
70-74	18.7%	24.5%	19.1%	23.4%	19.0%	23.6%
75-79	17.0%	20.7%	18.1%	21.0%	17.9%	21.0%
80+	38.5%	24.6%	33.5%	26.3%	34.5%	25.9%
Sex						
Female	54.1%	56.4%	53.3%	58.0%	53.4%	57.7%
Race/Ethnicity						
Others	3.1%	2.3%	7.1%	5.2%	6.3%	4.6%
Hispanic	6.8%	2.2%	9.5%	7.7%	8.9%	6.6%
Non-Hispanic Black	6.9%	5.5%	12.2%	8.7%	11.2%	8.0%
Non-Hispanic White	83.2%	90.0%	71.1%	78.5%	73.5%	80.8%
Socioeconomic Factors						
Education						
<High school	39.7%	37.1%	36.9%	30.9%	37.4%	32.1%
=High school	45.7%	47.8%	46.9%	46.7%	46.7%	46.9%
>High school	14.7%	15.1%	16.2%	22.4%	15.9%	21.0%
Insurance						
Private	39.6%	55.6%	40.7%	54.8%	40.5%	55.0%
Public only	59.1%	44.2%	56.62%	45.0%	56.8%	44.9%
Uninsured	1.4%	0.2%	3.0%	0.2%	2.7%	0.2%
Health Conditions						

Perceived Physical Health						
Poor or Fair	30.8%	25.0%	31.5%	23.1%	31.4%	23.5%
Good	27.8%	30.5%	28.0%	31.8%	27.9%	31.6%
Very good or Excellent	41.5%	44.5%	40.5%	45.0%	40.7%	44.9%
Perceived Mental Health						
Poor or Fair	20.7%	9.8%	18.5%	9.1%	18.9%	9.2%
Good	30.2%	32.6%	30.2%	29.0%	30.2%	29.7%
Very good or Excellent	49.0%	57.7%	51.3%	62.0%	50.9%	61.1%

Rural and urban older adults who reported family practitioners, general internists, or geriatricians as USCs were further used in bivariate analyses. A greater proportion of older adults with USCs utilized family practitioners followed by general internists and then geriatricians. Among rural populations, only education and distance to the USC were related to which kind of physician they had as USCs (Table 2). Rural older adults who received a degree lower than high school were self-reported as more likely to use family practitioners as the USCs (40.0% vs. 32.1%) while those with higher education level were more likely to report internists as their USCs (21.1% vs. 13.3%). In addition, patients who chose family practitioners as the USCs were more likely to spend less than 15 minutes to reach their doctors (52.8% vs. 44.0%). Except for gender, all the other variables were significantly associated with the discipline of physician urban older adults used as a USC. Urban older adults who used geriatricians as the USCs were more likely than people who chose another two kinds of physicians (i.e. family practitioners and general internists) to be older than 80 years old, be a Hispanic, hold a degree higher than high school, be covered by private insurance plans, spend less than 30 minutes to reach the USCs, perceive excellent physical health and perceive good mental health status.

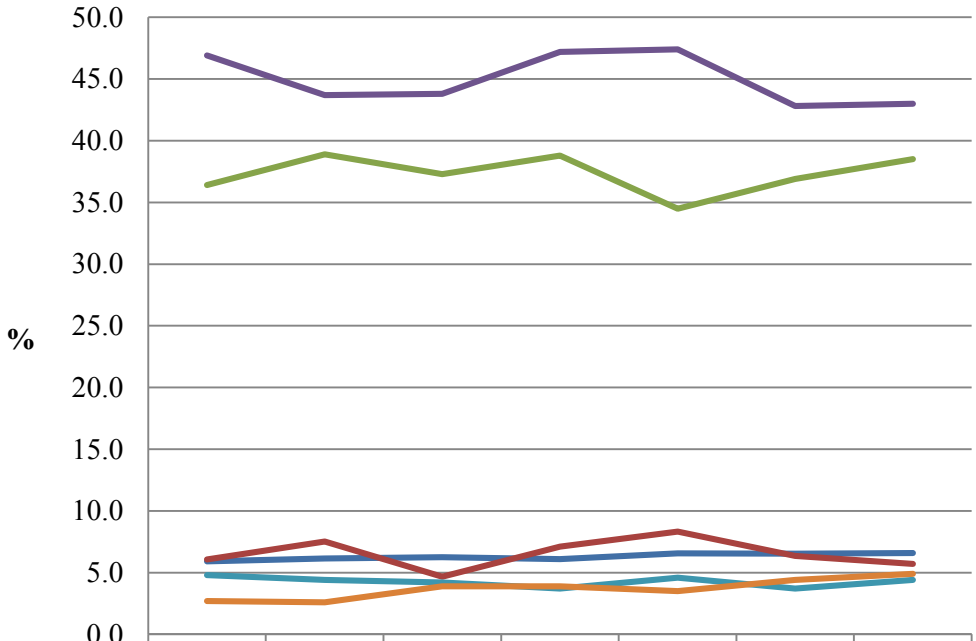
Table 2. Weighted Rural-Urban Comparisons of Individual Characteristics in People Who Used Family Practitioners, Internists, and Geriatricians as the Usual Source of Care (USC)

Weighted Percentage	Rural			Urban		
	FM N=17,668,211	**IM N=4,882,472**	**GM N=21,866**	**FM N=67,593,383**	**IM N=34,014,961**	**GM N=1,060,035**
Demographic Factors						
Age						
65-69	28.2	29.4	66.9	28.0	28.2	2.2***
70-74	25.6	27.5	33.1	22.1	24.2	29.6***
75-79	21.1	24.2	0.0	22.4	21.1	20.7***
80+	25.2	18.6	0.0	27.5	26.5	47.5***
Sex						
Female	58.5	53.1	100.0	59.4	60.1	65.9
Race/Ethnicity						
Others	1.8	1.4	0.0	4.5	6.7	4.3***
Hispanic	2.2	2.5	0.0	7.9	4.0	10.6***
Non-Hispanic Black	6.0	2.5	0.0	8.7	6.6	7.0***
Non-Hispanic White	90.0	93.6	100.0	79.0	82.7	78.1***
SES						
Education						
<High school	40.0	32.1	33.1*	32.7	22.1	19.8***
=High school	46.7	46.8	66.9*	47.8	47.5	42.5***
>High school	13.3	21.1	0.0*	19.5	30.4	37.7***
Insurance						
Private	56.9	64.8	33.1	53.9	60.9	67.0***
Public only	42.9	35.2	66.9	46.1	39.0	33.0***
Uninsured	0.2	0.0	0.0	0.1	0.1	0.0***
Distance to USC						
<15 minutes	52.8	44.0	0.0**	49.3	43.6	48.9*
15-30	34.2	32.7	33.1**	41.7	47.6	45.0*
31-60	11.7	17.1	66.9**	7.8	7.5	5.8*
>60 minutes	1.3	6.2	0.0**	1.2	1.3	0.3*

Health Conditions						
Physical Health						
Poor or Fair	28.2	22.5	66.9	23.9	19.8	13.3**
Good	29.5	31.9	33.1	31.5	32.4	21.5**
Very Good or Excellent	42.2	45.6	0.0	44.6	47.9	65.3**
Mental Health						
Poor or Fair	11.8	7.8	0.0	9.3	7.5	9.1***
Good	32.9	34.1	100.0	30.0	26.0	38.8***
Very Good or Excellent	55.3	58.1	0.0	60.7	66.5	52.0***

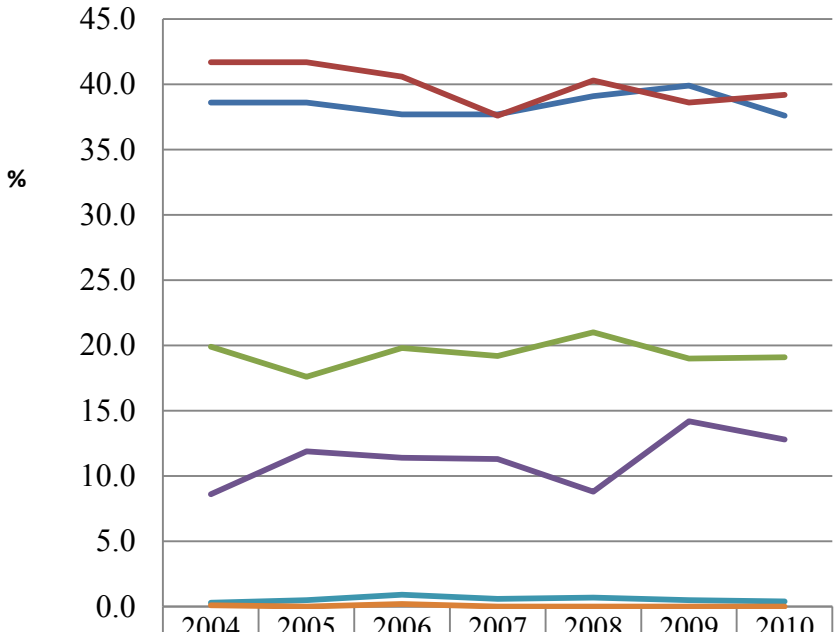
Notes: FM-Family Medicine; IM-Internal Medicine; GM-Geriatric Medicine; SES-Socioeconomic status; *, **, *** Significantly from People having family practitioners or internists as the USCs at α=0.05, 0.01, and 0.001 level.

As shown in the Figure 1, higher proportions of rural older adults than urban ones had facilities as the UCSs. The gap has been smaller from 2008. Next, the proportion of rural older adults who had internists as the USCs has increased since 2008. Of the three physician disciplines, geriatricians were the least USC for both rural and urban populations.



	2004	2005	2006	2007	2008	2009	2010
U-NoUSC	5.9	6.1	6.3	6.1	6.6	6.5	6.6
R-NoUSC	6.1	7.5	4.7	7.1	8.3	6.4	5.7
U-Facility	36.4	38.9	37.3	38.8	34.5	36.9	38.5
R-Facility	46.9	43.7	43.8	47.2	47.4	42.8	43.0
U-Others	4.8	4.4	4.2	3.7	4.6	3.7	4.4
R-Others	2.7	2.6	3.9	3.9	3.5	4.4	4.9

Figure 1. Rural-Urban Comparisons in the Trend of USC Choices
Note: R-Rural, U-Urban



	2004	2005	2006	2007	2008	2009	2010
U-Family Practitioners	38.6	38.6	37.7	37.7	39.1	39.9	37.6
R-Family Practitioners	41.7	41.7	40.6	37.6	40.3	38.6	39.2
U-General Internists	19.9	17.6	19.8	19.2	21.0	19.0	19.1
R-General Internists	8.6	11.9	11.4	11.3	8.8	14.2	12.8
U-Geriatrician	0.3	0.5	0.9	0.6	0.7	0.5	0.4
R-Geriatrician	0.1	0.0	0.2	0.0	0.0	0.0	0.0

Figure 1. Rural-Urban Comparisons in the Trend of USC Choices (Continued)

A multinomial logistic regression model was used to identify whether rural/urban residence affected the decision of using what type of physician as a USC (Table 3). After controlling for all individual characteristics, the residence was still significantly related to the type of USC. The urban older adults were more likely than rural ones to have geriatricians reported as their USC (O.R.=10.752, p=0.002). Urban older adults also were more likely than their rural counterparts to have general internists as their USCs (O.R.=1.701, p<0.0001).

Table 3. Weighted Geographic Impacts on the Type of Physician as a Usual Source of Care (USC) Adjusted for Covariates

(Reference Group)	Internal Medicine		Geriatric Medicine	
	O.R. (Std.)	95% C.I.	O.R. (Std.)	95% C.I.
Urban Areas (Rural Areas)	1.701 (.173)***	(1.394, 2.077)	10.752 (8.211)**	(2.396, 48.242)
Age (65-69)				
70-74	1.117 (.100)	(.937, 1.332)	11.599 (7.332)***	(3.349, 40.179)
75-79	1.011 (.095)	(.840, 1.216)	8.050 (5.792)**	(1.957, 33.112)
80+	1.018 (.101)	(.839, 1.236)	15.888 (10.965)***	(4.092, 61.688)
Female (Male)	1.095 (.056)	(.990, 1.211)	1.432 (.479)	(.742, 2.765)
Race/Ethnicity (Others)				
Hispanic	.445 (.092)***	(.296, .670)	1.640 (1.685)	(.218, 12.360)
Black	.543 (.100)**	(.378, .781)	1.040 (.917)	(.184, 5.888)
White	.693 (.114)*	(.502, .956)	.784 (.662)	(.149, 4.122)
Education (< High School)				
=High	1.343 (.101)***	(1.159, 1.556)	1.554 (.591)	(.736, 3.283)
>High	2.057 (.203)***	(1.695, 2.497)	3.841 (1.996)***	(1.383, 10.669)
Insurance (Private Insurance)				
Public	.830 (.055)**	(.728, .945)	.541 (.176)	(.286, 1.024)
Uninsured	1.325 (.898)	(.350, 5.021)	omitted	Omitted
Distance (<15 minutes)				
15-30	1.311 (.093)***	(1.139, 1.508)	1.199 (.315)	(.716, 2.010)
31-60	1.265 (.161)	(.985, 1.625)	1.175 (.582)	(.443, 3.111)
>60	2.206 (.497)***	(1.417, 3.434)	.356 (.383)	(.043, 2.950)
Perceived Physical Health (Poor)				
Good	1.161 (.086)*	(1.003, 1.34)	1.222 (.661)	(.422, 3.540)
Excellent	1.050 (.081)	(.902, 1.222)	4.277 (2.535)*	(1.334, 13.709)
Perceived Mental Health (Poor)				
Good	.994 (.105)	(.808, 1.222)	1.138 (.754)	(.310, 4.185)
Excellent	1.106 (.116)	(.901, 1.359)	.352 (.247)	(.088, 1.396)

Notes: (1) Base outcome=People who chose family practitioners as the USCs. (2) *: $p<0.05$; **: $p<0.01$; ***:$p<0.001$. (3) O.R.=Odds Ratio; Std.=Standard error; C.I.= Confidence Interval. (4) 1 stratum omitted because it contains no population members.

Discussion

This panel survey study found that only a small number of the older noninstitutionalized U.S. population reports the lack of a usual source of care. This finding and related findings below has significant implications for the health and health care of older adults. It is emphasized by the

author that these are self-reported sample data that does not necessarily indicate that the USC has been utilized or not. While the reason(s) for the above findings from this study may not be clear, the demographics and characteristics provide potential correlates in this study.

This sampling survey examined the prevalence of a usual source of care (USC) across the U.S. Three physician disciplines (i.e. geriatricians, family practitioners, and general internists) were selected as a USC based on their being considered frequent providers of health care to the aging population. Consistent with the previous study[21], family practitioners were the most common USC noted in this survey, followed by the general internist category and lastly, geriatricians. During the seven-year study period, the distribution of USC among the three physician disciplines analyzed was relatively stable. Regardless of geographic location, this study also found that only a very few older adults reported geriatricians as their USC (i.e. less than 1% from 2004 to 2010). This is likely related to the decreasing supply of geriatricians across the nation.[22] Family practitioners are by far the most common physician discipline reported as a USC, while the general internists were in the middle ranking. Yet it is the geriatrician discipline that receives the most intensive education and training to care for older adults. It is critical to discuss the crisis of geriatrician shortage given that the demand for geriatric care is expected to increase.[23]

Rural older adults, comprising 20% of the study sample, were less likely than urban ones to report a USC during the study period of 2004 through 2010. The gap between rural and urban on the presence of having general internists as the USCs has tended to narrow. This study could not identify whether rural older adults are more likely to recognize the importance of internists or whether the rural internists are more accessible than other physicians. Future studies should further understand and address these changes. Also, to ensure that rural older adults have a usual and ongoing source of care, targeted research and policies examine the geographic distribution of physicians are essential.[24]

Our study found that older age, higher education level, and better physical health status are related to a higher probability of having geriatricians as USCs. After adjusting for all covariates, urban older adults are more likely than rural ones to have geriatricians as their USCs. These findings indicate that the importance of geriatricians might be well recognized by very old, knowledgeable, and healthy adults in urban areas. It is important to begin the effort early on a national scale to enhance the geriatrician capacity, improve the recognition of a geriatrician in a team of medical care, and encourage older adults to use geriatric care provided by geriatricians. In addition to education level and physical health status, race, insurance, and distance to a USC are relevant factors to have internists as USCs. Future research is recommended to further explore the interaction effects of all covariates on the choice of USC.

Limitations. This study had several limitations. First, reliability has always been a concern in a self-reported survey. For example, verification of the reported USC in the MEPS was lacking. Second, the MEPS included data only on non-institutionalized people. Thus caution needs to be taken in interpreting the results which might not be generalizable. Third, the study only collected data of healthcare consumers, but information of healthcare providers was not obtained. For instance, it was unknown whether an individual visited a family practitioner in the doctor's private office or a hospital. Patient-physician relations were not addressed either which might be a reason why a patient does not like to seek for medical services.[25] Fourth, older adults might

have to rely on others such as their children or grandchildren to take them to the doctor. In those cases, the USC might be that of the children who provide transportation services. Unfortunately, this study could not address this potentially influential factor.

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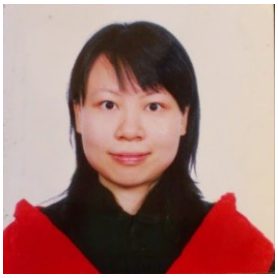

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