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Insurance Status and Health Service Utilization Among Newly-Arrived Older Immigrants

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Following the 1996 welfare reform, newly arrived older immigrants with less than 5 years of residence (NOIs) have been barred from Medicaid benefits. Neither are they eligible for Medicare due to lack of work history. This study examines the relationship between immigrant status (NOIs or not), health insurance, and health service use among older immigrants; whether insurance mediates the relationship between immigrant status and health service use. The 2000 National Health Interview Survey was analyzed. The sample includes respondents aged 65 or older who are foreign-born ($N = 1, 178$). The adapted Andersen model was used. A series of logistic regressions show insurance is a complete mediator between immigrant status and health service use among older immigrants. Immigrant status was significantly related to the mediator, health insurance; older immigrants with longer than 5 years of residence were 31 times more likely than NOIs to have health insurance in terms of odds. Also, different from health service use among U.S.-born older adults, older immigrants' service use is significantly related to their insurance status. There was no direct relationship between immigrant status and health service use.

KEY WORDS: older immigrants; health care access; health insurance; welfare reform.

INTRODUCTION

Not everybody in the U.S. is guaranteed the right to health care. Even though the U.S. spends 13.9% of its gross domestic product (GDP) on health care, U.S. adults receive only about half of the medical care they need for the leading causes of death and disability (1). Therefore, given limited resources, the issues around health care resource allocations have drawn high public attention. In this discussion of resource allocation, older immigrants seem to encounter double jeopardy by being old and being newcomers at the same time, since older adults and immigrants have been respectively accused of higher levels of public resource use (2, 3). Although the older adult population consists of nearly 12% of the U.S. population, they make up more than 30% of all hospital bed use and 25% of the total health care expenditures in the U.S. (2). In addition, the growth of the immigrant population and their public service usage has raised concerns among politicians and the general public for a long time. The size of the foreign-born population reached almost 31.1 million in 2000 (4), up from 20 million in 1990 (5).

The welfare reform act of 1996, titled the Personal Responsibility and Work Opportunity Act (PRWORA; Public Law 104–193), reflects well the concerns about immigrants' use of public resources and the impact of public policies on older immigrants' service use. The law bars most public assistance and social services for noncitizen immigrants, unless individual states are willing to pay for the costs (6). As a result, newly arrived older immigrants became no longer eligible for SSI and Medicaid benefits in most states until they achieved citizenship. To become a U.S. citizen, a person should have been

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lawfully admitted for permanent residence and have resided continuously as a lawful permanent resident in the U.S. for at least 5 years prior to filing, with no single absence from the United States of more than 1 year (7, 8). Therefore, newly arrived older immigrants with fewer than 5 years of residence in the U.S. (NOIs), who are the focus of this paper, are not eligible for most public services.

However, in contrast to the general public's belief, older immigrants' formal health service use is lower than that of their U.S.-born counterparts after controlling for age and health status (9, 10). Instead, older immigrants tend to rely heavily on the informal support system due to barriers to service use (9). Some formal services, such as supportive services, could be substituted or supplemented by informal care, and older adults usually prefer informal care when it is available (11). Nevertheless, medical services which are so fundamental to older adults' survival and which allow little room for the discretion of a patient, cannot be fully replaced by the lay support system.

Health Insurance Status Among Older Immigrants: Major Barrier to Service Use

Many researchers have tried to explain the barriers against health service use among older immigrants with their individual characteristics, such as lack of English proficiency (12, 13). However, there are structural barriers that are external to older immigrants, such as lack of cultural competency among care providers and lack of financial means and health insurance (9). Among structural barriers, the problems related to lack of health insurance are considerable among older immigrants since disproportionately high percentages of them are uninsured. Approximately 45% of older adults who do not have any health insurance coverage were foreign-born in 2000 (14), whereas only 1.2% of the U.S. older adults are foreign born (15).

Although Medicare is almost universal among older adults over 65 in the U.S., covering approximately 98% of older adults (16), older immigrants, in general, are less likely to be entitled for Medicare due to lack of work history in the U.S. (17). According to the Survey of Income and Program Participation (SIPP) data, about 76% of the older foreign-born population had worked more than 40 quarters and became entitled to Social Security benefits in 1993 (15). In addition, in the U.S., employer-sponsored private insurance is often carried to the post-retirement period (18). However, immigrants are less likely to have job-related private health insurance due to their marginal employment with no or low benefits (18, 19). Thus, the rate for private insurance is much lower among adult immigrants (41%), compared to that of the native born population (78%) (3). Among those with private insurance, only 58% of immigrants were insured through their employers, while the proportion was 84% among their U.S.-born counterparts (3).

As a result, older immigrants display higher dependence on Medicare or Medicaid if they are eligible. While only 15% of older Caucasians rely solely on Medicare, 36% of older Latinos have no insurance other than Medicare (9). In addition, before welfare reform, 16% of older immigrant Medicaid recipients solely relied on Medicaid, while less than 1% of older U.S. citizens did (15). However, after the reform, Medicaid enrollment of immigrants fell (20) and uninsured rates among immigrants increased (21).

Among older immigrants, newly arrived older immigrants with less than 5 years of residence in the U.S. (NOIs) are more vulnerable. Due to lack of work history in the U.S., their only source of health insurance besides Medicaid and other state health care benefits is through private coverage. However, purchasing private insurance individually is prohibitively expensive for many older adults with moderate income, due to higher administrative costs and bigger financial risks of insurance companies regarding adverse selection (22). Moreover, most private insurance policies will not include an elderly parent to a family plan of an adult child (17). The welfare reform of 1996 might also further polarize the payment methods between NOIs and non-immigrant elderly. In terms of the sources of hospital service payments in 1995, 61.2% of the total of 350 billion dollars were paid by the federal and state governments, while only 3.3% was paid out of pocket, including deductible, co-payment, and premium payments (23). However, the proportion of out-of-pocket payment would be larger among newly-arrived older immigrants, given their lower rates of health insurance.

Health Insurance and Service Use Among Older Immigrants

It is argued that the coverage of health insurance does not automatically guarantee access to health

care, since there are other barriers to health care among immigrants (24). For example, it is true that even with proper insurance coverage, an older immigrant's communication difficulty may still exist as a barrier to health care service. However, it is also true that the cost of uncovered medical services will prohibit an uninsured person's needed health care usage (18). Different from health service use among U.S.-born older adults, studies have shown that older immigrants' health service utilization is significantly affected by their health insurance status, when health status, income, and other predisposing conditions are held constant (3, 18). For example, among older Chinese immigrants, uninsured status was related to the lower probability of having a physician visit (13), delay in health service use, and lower quality of service with longer waiting periods (25). Also, lack of health insurance is associated with lack of a regular source of care among immigrants (26). Many of the uninsured population obtain almost all of their medical care from emergency departments, clinics, and inpatient service in public hospitals (24).

Research Questions

The literature on older immigrants' health service use has looked at the relationship between immigrant status and insurance status and the relationship between insurance status and health service use separately. This study contributes to the literature by testing the relationship among those three variables together, hypothesizing the relationship between immigrant status and health service use is mediated by insurance status.

Immigrant status in this paper refers to whether a person is a newly arrived immigrant or not, regardless of their legal status. In order to relate the effects of welfare reform on service utilization, service use of older immigrants with less than 5 years of residence (NOIs) will be compared with that of older immigrants with longer residence. Literature classifies late-life immigrants as "the invited elderly" because most of them came to the U.S. to reunite with their adult children, compared with "the immigrated elderly" who immigrated to the U.S. in their 30s and 40s for better opportunities and became older in the U.S. (27). The invited elderly, or late-life immigrants are likely to be the new immigrants in their 60s and 70s, and to be experiencing more severe psychological, physical, and financial difficulties than the immigrated elderly (28). Older immigrants who are more likely to be affected by welfare reform and benefit cuts are these late-life immigrants. Based on these distinctions of older immigrants from the literature, all of the NOIs in this study would be late-life immigrants, while older immigrants with longer lengths of residence in the U.S. possibly include some late-life immigrants.

The specific research questions are as follows:

1. Does insurance status mediate the relationship between immigrant status and health service use?
2. Is immigrant status related to health service use among older immigrants while insurance status is controlled? (Direct effect)
3. Does the relationship between immigrant status, health insurance, and health service use remain the same across the types of health services: Physician visits and hospitalization?

CONCEPTUAL FRAMEWORK

Andersen's behavioral model of health service utilization has been evaluated as the most comprehensive (29) and widely applied service use model (13, 30). Through the model, Andersen hypothesized that health service use is a function of 1) predisposition to use services; 2) ability to secure services; and 3) need for such services (Fig. 1) (2, 31).

First, the predisposing component explains the factors related to the propensity to use more or less services among different individuals (32). Second, the enabling component describes the conditions that make health service resources available to the individuals. Therefore, enabling factors are seen as a must for service use even among the individuals with high propensity to service use (32). Thirdly, need refers to perceived and evaluated health status or illness, which is the most direct and important cause of health service use. In other words, the presence of predisposing and enabling conditions is necessary, not sufficient, in service use according to the model.

The last component of the model is use of health services, the resultant behavior focused on in the model. Andersen (32) made a distinction between discretionary and non-discretionary utilization, considering the degree of choice one can make. The distinction is important because Andersen assumes that the level of discretion of service use behavior decides the contribution of each of the three components

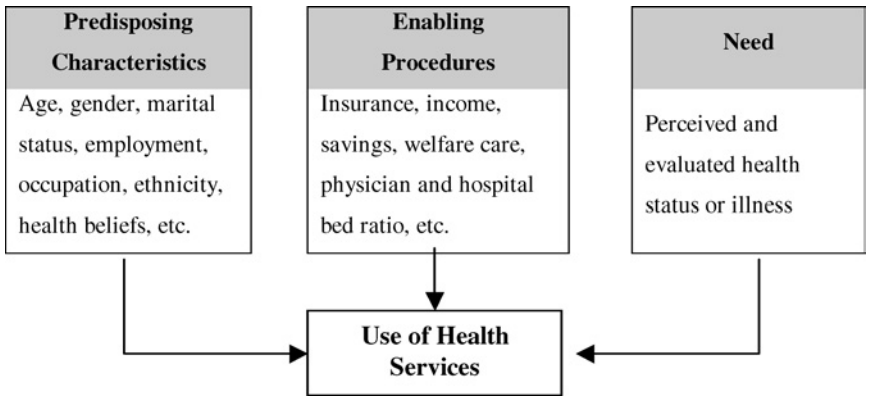

Fig. 1. The Behavioral Model of Service Use (31).

as a predictor. Namely, he indicates that "the more discretionary the behavior, the more important will be the enabling components in explaining service use behavior" (p. 18). When there is little discretion to be exercised due to severe health conditions, need tends to be a primary indicator of service use behavior. Hospitalization is regarded as low discretionary, a physician visit as medium, and dental care as high discretionary. In this study, hospitalization and physician use will be compared in relation to immigrant and insurance status.

Application to Older Immigrants

There has been little research on health care utilization of immigrants (3). Earlier studies showed that need characteristics are the most powerful predictors of health care use among older Americans due to almost universal coverage of Medicare and Medicaid (2, 33). In fact, the Andersen model has been criticized that it does not explain much of service utilization because enabling and predisposing factors have turned out insignificant in many studies. However, considering low insured rates among older immigrants, enabling factors would be essential in explaining their service use, suggesting the suitability of the model for this population.

Many studies which used the Andersen model have modified the model corresponding to their populations and research purposes (3, 13, 30, 31, 34–37). In this study, immigrant status and the country of origin, which are unique to the immigrant population, will be included in the model. In addition, studies on new immigrants' health status have shown the necessity of controlling for health factors in comparing service utilization. Studies indicate that the duration of stay in the U.S. is negatively associated with health status among immigrants (8). It is called a "healthy immigrant effect," which is attributed to positive selection of immigrants and cultural buffering of home culture (38). According to this phenomenon, new immigrants would use less health service due to their better health status. Therefore, controlling for health status is necessary in comparing health service utilization between the two immigrant groups with different lengths of residence in the U.S.

METHODS

Data

The National Health Interview Survey (NHIS), which has been conducted annually since 1957 by the National Center for Health Statistics (NCHS), Center for Disease Control and Prevention (CDC) (39), was used in this study. The survey was designed to study health status and service utilization of the civilian, noninstitutionalized, household population of the U.S. Even though the NHIS is a household survey (39), the data are also available on the individual level, including the dimensions of health status and limitation of activity, health care access and utilization, health insurance, and other socio-demographic variables. Especially, the survey assesses respondents' immigration status, length of residence, and place of origin, which are critical to this study, and which are not readily available in other datasets.

Table I. Description of Variables

Variables	Description
Predisposing factors	
Age	1) 65–74, 2) 75–84, 3) 85+
Gender	Female, male
Marital status	Married, not married
Education	1) Up to 8th grade, 2) 9–12th grade, 3) some college
Place of birth	1) Mexico, 2) Central/South America, 3) Europe, 4) Other
Immigrant status	Less than 5 years of residence in the U.S (i.e., Newly arrived Older Immigrants (NOIs)): yes/no
Enabling factors	
Health insurance status	Yes/no (Note: Health insurance is defined very loosely with this variable, which includes Medicare, Medicaid, private insurance, etc.)
Income	Ratio of family income to 1999 poverty threshold from the Census Bureau: the poverty ratio below 1, 1 or above.
Need factors	
Self-rated health status	Respondent-reported health assessment: Excellent/very good, good, fail/poor
Combined functional limitations	Limitations with ADI or IADL: yes/no
Dependent variables: Service utilization	
Physician visit	Past 2 weeks: yes/no
Hospital overnight stay	Past 12 months: yes/no

Sample

The sample for this analysis was drawn from the 2000 NHIS personal-level file. Among 100,618 respondents, only those individuals who are 65 years or older and who were not born in the 50 U.S. states and the District of Columbia were selected ($N = 1178$).

Variables

The variables based on the Andersen model are listed in Table I with brief descriptions.

The observational periods of 12 months for hospitalization and 2 weeks for a physician visit were used in the NHIS. The same periods were also used in the Medical Outcome Study (MOS) (40). For a physician visit, which is regarded as a relatively trivial life event compared to hospitalization, efforts to narrow the reference period have been made to increase the accuracy of recalls for the past visits (41). Additionally, after the health status of respondents is controlled, which will be done in this analysis through a regression model, illness events immediately prior to the survey (i.e., within 2 weeks) would be random among respondents. On the other hand,hospitalization is assumed to be more of a landmark event and longer observational periods have been used (42).

To get national estimates, the weight variable, "Final Annual [WTFA]" will be used. This variable is for the data collected on the personal level, based on design, ratio, non-response and post-stratification adjustments (39).

Statistical Analyses

To describe and compare the characteristics of older immigrants by their immigrant status, chi-square tests will be used in relation to other independent variables and dependent variables in the model. To inspect the mediating impact of health insurance status on the relationship between immigrant status and health service use, a series of logistic regression models (43) will be analyzed separately for a hospitalization and physician visit. The first logistic regression model will examine the relationship between health service use (DV) and immigrant status (IV) without controlling for health insurance (mediator). However, the direct relationship between immigrant status and health service use is not essential in

establishing a mediating relationship, unless partial mediation is hypothesized (43). To assess whether health insurance affects the relationship between immigrant status and health service use, health insurance status will be added in the second logistic regression model. Lastly, to establish the relationship between a mediator and an independent variable, the third model will set insurance status as a dependent variable and immigrant status as an independent variable.

To assess the degree of multicollinearity among independent variables, the tolerance values were calculated (44). The tolerance values of independent variables included in the models under consideration ranged between 0.5563 and 0.9109. Therefore, there is no reason for suspecting the problems with multicollinearity among independent variables.

The logistic regression was chosen mainly due to the distributional characteristics of the dependent variables. The distributions of the continuous health care utilization variables, the number of hospitalizations and physician visits, are highly skewed (skewness = 7.84 and 5.68, respectively) with the majority of non-users (83.5% for hospitalization and 73.58% for a physician visit) and a few high-level users. In addition, the sample sizes across the values of the key variable of interest (i.e., immigrant status) are not split evenly (45).

RESULTS

Descriptive Statistics

Out of 1178 older immigrants in the sample, 52 are NOIs. Weighted population estimates in Table II show that 57.96% of respondents are female and 54.16% are currently married. In addition, whereas approximately 38% of older immigrants were not graduated from high school, 32.79% have educational attainments beyond high school. These polarized groups in terms of educational attainments are also observed in other studies on older immigrants (15). For enabling factors, 15.90% of older immigrants fell below the poverty threshold in 2000, whereas nationwide 10.2% of older adults were in poverty in the same year (46). In addition, 5.01% of older immigrants lack health insurance coverage.

Bivariate Statistics: By Immigrant Status (NOIs vs. Non-NOIs)

As seen in Table II, the two groups of older immigrants are not different across the variables in the model except for educational attainment ($\chi^2 = 11.93$, $p = 0.0026$), health insurance coverage ($\chi^2 = 220.697$, $p < .0001$), and physician visits in the past 2 weeks ($\chi^2 = 7.641$, $p < .0001$). NOIs are more likely to be associated with lower level of education, lack of insurance, and no physician visit than older immigrants with longer than 5 years of residence in the U.S. (non-NOIs). However, there is no difference in health status between NOIs and non-NOIs.

Logistic Regression

The results of logistic regression analyses are presented in Tables III–V. First, when insurance is not included in the model (Table III), immigrant status is significantly related to physician visits with other variables in the model held constant. Namely, when insurance coverage is not controlled, non-NOIs are almost 250% more likely to make a physician visit than NOIs in terms of odds ($p <= .0113$). A similar result was also demonstrated in Frisbie *et al.* (8). However, immigrant status was not related to hospitalization.

When insurance status (mediator) was included in the model (Table IV), the relationship between immigrant status and a physician visit disappeared. Instead, having health insurance was significantly related to use of hospital inpatient service ($p = 0.039$) and a physician visit ($p = 0.0173$). The odds of older immigrants with health insurance using the hospital for an overnight stay are approximately 4 times the odds of those without health insurance. Additionally, the odds of respondents with health insurance visiting a physician are 3.31 times the odds for those without insurance.

Finally, as seen in Table V, there was a significant relationship between immigrant status (IV) and health insurance status (mediator). Interestingly, lack of insurance among older immigrants was not related to income and health status. Instead, being uninsured was related to immigrant status, country of origin, and educational level. NOIs were 31 times more likely to be uninsured than non-NOIs in terms of odds ($p < .001$). In addition, compared with older immigrants with educational attainment beyond high school graduation, older immigrants with less than 9 years of education were about 3.5 times more likely to be uninsured in terms of odds ($p = 0.010$). Also, older immigrants from Mexico and Central/South America (OR = 22.93; $p = 0.003$) and "other" countries (OR = 18.20; $p = 0.008$) had much higher odds of not having health insurance coverage than the

Table II. Comparison by Immigrant Status on the Variables in the Logistic Regression Model: Weighted Percentage and Chi-Square ($N = 1178$)[a]

	All	NOIs[b]	Non-NOIs[c]	χ^2	p
Predisposing factors					
Age				2.713	0.2576
65–74	58.29	68.33	57.80		
75–84	31.42	27.04	31.64		
85+	10.28	4.62	10.56		
Gender				0.815	0.3666
Male	40.04	47.49	39.68		
Female	57.96	52.51	60.32		
Marital status				0.101	0.7501
Married	54.16	52.32	54.25		
Not-married	45.84	47.68	45.75		
Education				11.930**	0.0026
Up to 8th grade	37.72	58.69	36.69		
9–12th grade	29.49	14.15	30.24		
Some college	32.79	27.16	33.07		
Country of origin				4.586	0.1011
Mexico, Central/South America	39.89	47.20	39.53		
Europe	29.70	12.18	30.55		
Other	30.41	40.62	29.91		
Immigrant status					
NOIs	4.41	—	—		
Non-NOIs	95.59	—	—		
Enabling factors					
Health insurance				220.697***	<.0001
Yes	94.99	49.76	97.20		
No	5.01	50.24	2.80		
Income				0.483	0.4871
Poverty ratio below 1	15.90	18.49	15.78		
Poverty ratio ≥ 1	84.10	81.51	84.22		
Need factors					
Self-rated health status (N =1224)				0.398	0.8197
Excellent/very good	35.56	34.62	35.60		
Good	32.77	30.89	32.86		
Fair/poor	31.68	34.50	31.54		
Combined functional limitations (ADL&IADL)				0.871	0.3507
Yes	13.35	6.60	13.68		
No	86.65	93.40	86.32		
Service utilization					
Physician visit, past 2 weeks				7.825**	0.0052
Yes	26.49	7.58	27.42		
No	73.51	92.42	72.58		
Hospital overnight stay				1.896	0.1685
Yes	15.51	8.36	15.86		
No	84.49	91.64	84.14		

[a]Percentages were calculated based on the weighted values of the variables, while chi-square statistics were calculated from raw values.
[b]Newly arrived older immigrants with less than 5 years of residence in the U.S.
[c]Older immigrants with longer than 5 years of residence in the U.S.
*$p < .05$; **$p < .01$; ***$p < .001$.

odds among their counterparts who had immigrated from European countries. Therefore, the series of logistic regression models indicate that health insurance is a complete mediator and there was no direct effect of immigrant status on health service use.

Among control variables, gender, marital status, perceived health status, and functional limitation were significantly related to hospitalization when both insurance and immigrant status are included in the model (Table IV). First, males are 86% more

Table III. Logistic Regression on Variables Predicting a Physician Visit and Hospitalization Among Older Immigrants: Excluding Health Insurance Status ($N = 1178$)

	Hospitalization			Physician visit		
	Coefficient	Odds ratio	95% Confidence interval	Coefficient	Odds ratio	95% Confidence interval
Intercept	−3.3470			−2.788		
Predisposing factors						
Age						
75–84	−0.109	0.90	0.62–1.31	−0.244	0.78	0.57–1.07
85+ (65–74)	−0.172	0.84	0.48–1.48	−0.206	0.81	0.50–1.34
Gender (male = 1)	0.630	1.88***	1.30–2.72	−0.213	0.81	0.60–1.10
Marital status (married = 1)	−0.433	0.65*	0.45–0.94	0.133	1.14	0.84–1.55
Education						
9–12 grade	0.361	1.43	0.97–2.13	0.013	1.01	0.72–1.42
Some college (Up to 8th grade)	0.104	1.11	0.70–1.75	0.465	1.59*	1.11–2.30
Country of origin						
Mexico, Central/South America	−0.218	0.80	0.52–1.25	−0.015	0.99	0.69–1.42
Other (Europe)	−0.190	0.83	0.50–1.36	−0.082	0.92	0.62–1.38
Immigrant status (non-NOIs = 1)	0.597	1.82	0.68–4.89	1.228	3.42*	1.32–8.83
Enabling factors						
Income (poverty ratio below 1 = 1)	−0.066	0.94	0.62–1.42	−0.055	0.95	0.67–1.35
Need factors						
Self-rated health status						
Good	0.935	2.55***	1.53–4.24	0.286	1.33	0.93–1.91
Fair/poor (excellent/very good)	1.399	4.05***	2.43–6.78	0.925	2.52***	1.74–3.66
Combined functional limitations						
(ADL&IADL) (yes = 1)	1.325	3.76***	2.46–5.74	0.717	2.05***	1.38–3.04
Model Chi-square	124.1257		<.0001	78.6961		<.0001
df	13			13		

*$p < .05$; ** $p < .01$; *** $p < .001$.

likely to use the hospital for an overnight stay than females in terms of odds ($p = 0.0011$). Second, married older immigrants are 35% less likely to have a hospital overnight stay than their unmarried counterparts ($p = 0.0217$). Finally, need factors are all highly related to hospitalization among older immigrants. Compared with the odds of hospitalization among the respondents who reported their health status as excellent or very good, the odds of hospitalization among those with fair or poor perceived health status are 4.02 times greater ($p < .0001$). Also, the odds of a hospital overnight stay are 3.74 times greater among older immigrants experiencing functional limitations ($p < .0001$).

In terms of physician visits, educational attainments, self-rated health status, and functional limitation were also significant. Compared with the older immigrants who did not go to high school, those with beyond high school education are 55% more likely to visit physicians in terms of odds ($p = 0.0192$). In addition, different from hospitalization, there was no difference between the people who perceived their health as excellent or very good and those with good perceived health. However, for physician visits, people rated their health as fair or poor are 150% more likely to visit physicians than people with excellent or good self-rated health in terms of odds ($p < .0001$). Namely, compared with hospitalization, older immigrants visit physicians when their perceived health is worse. Older immigrants with functional limitation(s) are about 100% more likely to visit doctors than those without in terms of odds ($p < .0001$).

DISCUSSION

In this analysis, the mediating effect of health insurance between immigrant status and health service use was examined in relation to the welfare reform of 1996. As empirically demonstrated with other older populations, needs factors are significantly related to health service utilization among older immigrants. However, different from health service use among U.S.-born older adults, older immigrants'

Table IV. Logistic Regression on Variables Predicting a Physician Visit and Hospitalization Among Older Immigrants: Including Health Insurance Status ($N = 1178$)

	Hospitalization			Physician visit		
	Coefficient	Odds ratio	95% Confidence interval	Coefficient	Odds ratio	95% Confidence interval
Intercept	−4.097			−3.454		
Predisposing factors						
Age						
75—84	−0.116	0.89	0.61–130	−0.247	0.78	0.57–1.07
85+ (65–74)	−0.187	0.83	0.47–1.46	−0.219	0.80	0.49–1.32
Gender (male = 1)	0.621	1.86**	1.28–2.70	−0.219	0.80	0.59–1.09
Marital status (married = 1)	−0.436	0.65*	0.45–0.94	0.132	1.14	0.84–1.55
Education						
9–12 grade	0.346	1.14	0.95–2.10	−0.004	1.00	0.71–1.40
Some college	0.076	1.05	0.68–1.71	0.435	1.55*	1.07–2.22
(Up to 8th grade)						
Country of origin						
Mexico, Central/South America	−0.181	0.83	0.54–1.30	0.020	1.02	0.71–1.47
Other (Europe)	−0.173	0.84	0.51–1.38	−0.057	0.95	0.63–1.42
Immigrant status (non-NOIs = 1)	−0.033	0.97	0.33–2.85	0.721	2.06	0.75–5.62
Enabling factors						
Health insurance (yes = 1)	1.405	4.08*	1.07–15.46	1.198	3.31*	1.24–8.88
Income (poverty ratio below 1 = 1)	−0.056	0.95	0.62–1.44	−0.037	0.96	0.68–1.38
Need factors						
Self-rated health status						
Good	0.936	2.55***	1.53–4.24	0.286	1.33	0.93–1.91
Fair/poor (excellent/very good)	1.392	4.02***	2.41–6.73	0.915	2.50***	1.72–3.63
Combined functional limitations (ADL&IADL) (yes = 1)	1.319	3.74***	2.45–5.72	0.700	2.02***	1.36–2.99
Model Chi-square	129.79		<.0001	85.96		<.0001
df	14			14		

*p <.05; **p < .01; ***p <.001.

health service utilization is also significantly affected by their health insurance status when health status, income, and other predisposing conditions are held constant. Health insurance is, in turn, significantly related to immigrant status, implying higher vulnerability in health service use among newly arrived older immigrants. This is also true for hospital overnight stay, where patients are not supposed to have much discretion. Andersen suggested the equitability of access to health service where only need characteristics appear to be the significant predictors of service use (2). However, as demonstrated in this analysis, older immigrants, especially NOIs, experience a major structural barrier in accessing health care.

Lack of knowledge on available services and poor language skills, which are all related to the low level of acculturation, work as barriers to service use among older immigrants. Accordingly, studies have suggested that the level of acculturation is positively associated with the level of service use among older immigrants (37). Length of residence has been used as a proxy measure of the level of acculturation in many studies (3, 47). However, immigrant status (i.e., NOIs or not) was only indirectly related to health service use through insurance status in this study. This implies that length of residence is more of a proxy measure of legal status, which is related to systemic barriers to health care access (e.g., disqualification of noncitizens for Medicaid), than a measure of acculturation. A strikingly higher proportion of NOIs (50.24%) are uninsured in comparison to their counterparts (2.80%) (Table II). According to the NHIS report, 14.7% of the U.S. population of all ages were uninsured in 2000 (48). In addition, as stated earlier, Medicare alone covers almost 98% of older U.S. citizens (15).

Studies have related high rates of people lacking health insurance with increased health care costs and externalities to the general public in the long run (6). These arguments focus on the cost-effectiveness

Table V. Logistic Regression on Variables Predicting Health Insurance Status Among Older Immigrants: ($N = 1178$)

	Not having health insurance		
	Coefficient	Odds ratio	95% Confidence interval
Intercept	−6.6878		
Predisposing factors			
Age			
75–84	−0.31	0.74	0.38–1.44
85+ (65–74)	−0.82	0.44	0.10–2.02
Gender (male = 1)	−0.17	0.84	0.44–1.59
Marital status (married = 1)	−0.09	0.92	0.49–1.73
Education			
Up to 8th grade	1.25	3.48*	1.35–9.00
9–12 grade (some college)	0.76	2.13	0.75–6.02
Country of origin			
Mexico, Central/South America	3.13	22.93**	2.89–182.13
Other (Europe)	2.90	18.20**	2.17–152.58
Immigrant status (NOIs = 1)	3.44	31.04***	15.26–63.12
Enabling factors			
Income (poverty ratio below 1 = 1)	0.38	1.47	0.77–2.79
Need factors			
Self-rated health status			
Good	−0.09	0.92	0.45–1.87
Fair/poor (excellent/very good)	−0.39	0.68	0.32–1.43
Combined functional limitations			
(ADL&IADL) (yes = 1)	−0.64	0.50	0.17–1.622
Model Chi-square	138.8471		<.0001
df	13		

* $p < .05$; ** $p < .01$; *** $p < .001$.

of preventive care, such as immunization, earlier detection and treatment of infectious diseases, and preventing highly expensive ER visits. Currently, Medicaid coverage to noncitizen immigrants is not allowed except for emergency services (21). Therefore, increasing accessibility to health insurance and health care among older immigrants seems important for their health concerns, as well as cost-effectiveness of the usage of public health care expenditure. Given limited options for health insurance among newly arrived older immigrants and cost-effectiveness of preventive measures, allowing preventive Medicaid benefits or other alternatives for this population should be reconsidered.

The 5-year ban and disqualification of noncitizen immigrants for Medicaid only delay their eligibility for Medicaid for a certain period of time. After they achieve their citizenship, the need for Medicaid benefits among them would be greater, given the limited health insurance options they can choose from and lack of health care available for them during those years without health insurance. Therefore, if it is not feasible to provide the full Medicaid coverage, which includes nursing home care and hospital care, to immigrants (22), providing, at least, a minimal level of health insurance, including physician visits and diagnostic tests, would be better than nothing. This coverage could be classified under Medicaid's eligibility category for *medically needy* people, which is independent of their SSI recipient status. Additionally, the federal government needs to have a more comprehensive policy in providing direct financial assistance to local governments with a disproportionately high concentration of immigrants so that those states are not penalized in supporting immigrants' health care needs (49, 50). Siddharthan (1991) also proposed the waiver of premium payment requirements for public insurance for the first few years of immigration until older immigrants settle in a new country.

For older immigrants with moderate income, more affordable private health insurance options should be available. Given their age and health status, willingness to pay for health insurance coverage would be higher, compared with younger immigrants with similar levels of income. Outreach efforts

aimed at increasing the rates of people with insurance among this particular population would be important. Alternative insurance coverage for immigrants has been suggested in the literature, such as a catastrophic policy for a major illness or accident and a prepaid insurance plan that is not attached to the work place (51), although there have been controversies on those plans regarding payment sources and financial feasibility.

Finally, the role of health insurance should also be understood as the protection against financial risks associated with illness, as well as related to access to care. Since most of the late-life older immigrants are likely to be parents of their adult immigrant children, catastrophic medical bills resulting from their uninsured status are closely related to the financial risks of the whole immigrant family consisting of the first and second generation immigrants, who are now more likely to become U.S. citizens.

In addition to alternative health insurance options, inexpensive alternative health care services in the ethnic enclaves, such as community health centers which provide preventive services (12, 24), would promote better access to health care among older immigrants, as well as increase cost savings in the long run. For certain immigrant groups, special funds are available in case of medical emergencies. For example, in the Taiwanese community in LA, there are emergency funds established by ethnic community organizations to help those who are uninsured but need urgent hospitalization (13). However, those funds are for short-term relief and can cover only a small number of people. In addition, older immigrants who belong to less established ethnic communities with a short history of immigration in the U.S. are less likely to be benefited from these forms of funds.

There is much room for improvement in this study. Most of all, the sample size for NOIs ($n = 52$) is very small, compared with the one for non-NOIs ($n = 1, 126$). A bigger or more balanced sample size between the two groups might have resulted in a significant direct relationship between length of residence and health service utilization. Bivariate power analyses using an SAS module, UnifyPow (52), indicate that the statistical power of the chi-square test between hospital overnight stay and immigrant status is .28 (2-tailed; alpha = .05). On the other hand, the power was .80 for a physician visit. Therefore, the result in this study is valid; there is no direct relationship between immigrant status and a physician visit among older immigrants.

Additionally, NOIs in this study may include refugees who are very different from other older immigrants. Due to their involuntary nature of immigration, refugees are regulated with a separate set of immigration laws which stem from humanitarian concerns rather than immigrant control or sovereignty purposes (53). Also, the general public tends to show more generous attitudes toward refugees and their service use (54). Accordingly, refugees can apply for citizenship 3 years after their admission, instead of the 5 years for other immigrants (53), and are not subject to the 5-year ban on Medicaid (55). Currently, the NHIS data do not contain the information on legal status of non-citizens. In 2002, about 10% of older immigrants who were granted lawful permanent residence in the U.S. were refugees (56). Bigger differences might have been observed between NOIs and non-NOIs in this study without the possible inclusion of refugees in the sample. Considering the importance of legal status in deciding access to health care among older immigrants, it would be beneficial for future studies to include legal status as a key variable.

In the future, studying the sources of medical payments among different immigrant groups would lead to a deeper understanding of their health service utilization. In addition, it would be interesting to compare the level of service use in two different years among older immigrants, one before welfare reform and one after the reform or to compare health care among older adults with that of U.S.-born older adults. Finally, utilizing the repeated cross-sectional design of the NHIS, analysis of multi-year datasets would allow sufficient statistical power to study subgroup differences in health care use within the NOI population in terms of their country of origin, residence in ethnic enclaves, and so on.

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