

Factors affecting physician visits in Chinese and Chinese immigrant samples

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Abstract:

This study examines predictors of Western physician utilization using the Andersen's Behavioral Model of Health Services Use for Chinese elders who reside in Shanghai and immigrant Chinese elders who reside in the US. Chinese elders are under-studied relative to their population size and in the US are known to underutilize the healthcare system. Underutilization is highly correlated with poor health and well-being. A unique dataset allowed us to examine predictors of physician utilization for Chinese elders who resided in different countries, in an effort to determine how being an immigrant affects utilization. One hundred and seventy-seven Chinese elders in Boston and 420 Chinese elders in Shanghai participated in the survey. Multiple regression analyses were conducted separately for each sample. Predictors of physician visits for the Boston sample are insurance status, health, and social network, and for the Shanghai sample, use of Chinese medicine, health, and marital status predicted physician visits. We found that access to care variables significantly affects physician utilization for immigrant elders, and that Chinese elders in Shanghai utilize a bicultural system of care. The results indicate that in order to create effective healthcare practices for elder Chinese, alternative healthcare beliefs should be understood by Western physicians.

Keywords: China; USA; Immigrants; Older people; Traditional Chinese medicine; Physician visits; Healthcare utilization

Article:

Introduction

Over 12 million Asian Americans live in the United States. Almost one-fourth of US Asians are Chinese ([US Census Bureau, 2004](#)). Currently 10% of the Chinese American population is aged 65 or older; this population is projected to increase over 600% in the next 30 years ([American Association for Retired Persons & Agency on Aging \(AARP\), 1996](#)). Despite this projected rapid growth, Chinese elders are under-studied relative to their population size ([Andersen, Harada, Chiu, & Makinodan, 1995](#)). As the US experiences increasing population diversity, studies are needed that increase cultural understanding. Cultural competence in particular is a central issue for service and healthcare providers.

Studies have shown that Asians underutilize the healthcare system and have low rates of social service use ([Boult & Boult, 1995](#); [Hu, Snowden, Jerrell, & Nguyen, 1991](#); [Snyder, Cunningham, Nakazono, & Hays, 2000](#); [Sproston, Pitson, & Walker, 2001](#); [Zhang, Snowden, & Sue, 1998](#)). There is also considerable variation among different Asian ethnic groups, both in terms of level of use ([Sproston et al., 2001](#)) and the variables that explain healthcare utilization ([Ryu, Young, & Kwak, 2002](#)). Of the studies we reviewed on healthcare use, some aggregated various Asian groups ([Boult & Boult, 1995](#); [Ngo-Metzger,](#)

Legedza, & Phillips, 2004; Snyder et al., 2000) or aggregated Chinese with other ethnic groups (Wong et al., 1998). Of the limited studies on Chinese Americans, most had sample sizes smaller than 100 (Crain, 1996; Ma, 1999, 2000; Pang, Jordan-Marsh, Silverstein, & Cody, 2003; Wong, Yoo, & Stewart, 2005, 2006; Zhang & Verhoef, 2002), or aggregated age groups, and used age as an independent variable in samples with various age groups (Jang, Lee, & Woo, 1998; Li, Stewart, Stotts, & Froelicher, 2005; Ryu et al., 2002). To avoid making oversimplified assumptions about Asians, researchers recommend studying specific subgroups (Andersen et al., 1995; Gwen, 1997; Ryu et al., 2002).

Researchers have identified access to care barriers and cultural beliefs that may affect the Western healthcare utilization patterns of Chinese Americans. Older Chinese Americans in particular are accustomed to a bicultural system of care. China has a unique healthcare system in that Western medicine (WM) and traditional Chinese medicine (TCM) are often practiced simultaneously in clinical settings. The Chinese government has supported TCM, even establishing a department at the Ministry of Health (Hesketh & Zhu, 1997). It is estimated that 40% of the drugs prescribed by doctors in Western medical settings are traditional Chinese medications (Zheng & Hillier, 1995). In a recent survey of Chinese doctors, Harmsworth and Lewith (2001) found that 98% of doctors received training in TCM. Many doctors prescribed a combination of treatments, preferring TCM for chronic conditions or acute illnesses and WM for life-threatening illnesses.

TCM has been practiced in China for over 2000 years. Contrary to the disease model of Western medicine, TCM focuses on holistic treatment and restoring harmony and balance in body and spirit. Components of TCM include acupuncture, herbal and dietary treatments, and chiropractics. TCM is considered useful in health promotion and in managing chronic conditions (Chan et al., 2003; Lam, 2001; Ma, 1999). Reasons given by Chinese elders for using TCM include an absence of side effects, to maintain health, and to eliminate the health problem instead of just treating the symptoms (Lam, 2001; Li et al., 2005; Sproston et al., 2001). In a study of attitudes towards Western physicians, Chan et al. (2003) found that older Chinese adults were more likely than their younger counterparts to believe in the superiority of TCM over WM and to distrust Western doctors. In the US other non-cultural reasons for not using Western medicine include misunderstanding insurance benefits and affordability (Pang et al., 2003; Zhang & Verhoef, 2002). On the other hand, since most health insurance plans do not cover TCM, it also prevents individuals from seeking TCM. Nonetheless, some studies found that some Chinese persons who utilize TCM also visit Western physicians (Foreman, Yu, Barley, & Chen, 1998; Ma, 1999; Pang et al., 2003). Pang et al. (2003) recommends further research that focuses on understanding the healthcare utilization patterns of Chinese elders.

Currently the healthcare system in China is bifurcated. While the overwhelming majority of rural elders do not have health insurance, in urban areas, all retired employees are covered by Social Medical Insurance which is sponsored by the state. Employers and current employees pay taxes into the system. Social Medical Insurance only covers urban retired employees. Urban elders who have never worked in the past do not have medical insurance. A spouse who has never worked, but is married to a retiree has up to half of their medical costs reimbursed by social medical insurance, depending on the medical services provided. The concept of private insurance is new in China. Only recently, certain

types of insurance, such as life insurance and long-term care insurance, have begun to emerge in urban areas. No private medical insurance exists at this point.

In the United States most of the older adults have Medicare, which is a federal government health insurance program. Most people 65 or older are eligible for Medicare hospital insurance (Part A) based on their own, or their spouse's employment. Medicare Part A covers inpatient hospitalization, and Medicare Part B covers physician and out-patient visits. Almost anyone who is 65 or older can enroll in Medicare Part B by paying a monthly premium. In contrast, Medicaid is a publicly financed health insurance program for certain groups of low-income persons. Older adults qualify based on income and asset requirements. Older adults who qualify may have their Medicare Part B premiums paid by Medicaid. Older adults may also have supplemental insurance from their previous employer.

The healthcare system in the United States is predominately based on the biomedical model of medicine. The model focuses on physical aspects of disease and treatment. Preventive healthcare practices and alternative health practices are often not recommended or offered. This is reflected in the health insurance system. Medicare, for example, does not cover alternative practices such as acupuncture. Chiropractic is covered only on a limited basis.

This study examines predictors of Western healthcare utilization for Chinese elders who reside in Shanghai, China and immigrant Chinese elders who reside in Boston. It seeks to determine how financial resources, number of years in the US for the Boston sample, and use of TCM affect utilization of Western physicians. This study expands on previous research in several important ways. First, this is one of the first studies to examine healthcare utilization patterns of a first-generation immigrant population and to have a similar sample of their counterparts in the land of origin. The healthcare utilization patterns of the Shanghai sample could be perceived as a baseline that aids in understanding how healthcare practices may change after immigration. Second, both samples are sufficiently large to control for individual and health characteristics, access, and cultural variables. Third, this study adds to the growing number of studies on Chinese healthcare utilization. This study provides information that could be used to create effective healthcare practices that incorporate cultural differences and alternative healthcare beliefs to better serve diverse populations.

Theoretical model

Since its inception in 1968 (Andersen, 1968), the Behavioral Model of Health Services Use has been extensively revised and widely employed to explain healthcare access and utilization. The model proposes the use of healthcare services based on an individual's predisposing, enabling, and need characteristics. This model has been used to study healthcare utilization in Asian samples (Shin, Kim, Juon, Kim, & Kim, 2000; Snyder et al., 2000).

Predisposing characteristics are individual aspects, such as demographic factors that determine the willingness of an individual to utilize healthcare services (Andersen, 1995; Andersen & Newman, 1973). The predisposing characteristics used were standard measures of sociodemographic attributes: gender, age, marital status, and education. In Chinese

samples, women (Ryu et al., 2002; Sproston et al., 2001), married persons, and those with higher educational attainment (Hislop et al., 2003; Ryu et al., 2002) utilize Western healthcare. However, other studies have found that older Chinese men are more likely to use Western physicians than older Chinese women (Pang et al., 2003). Increasing chronological age is associated with increased physician visits (Ryu et al., 2002).

Number of years in the US is used as a proxy measure for acculturation. Studies using measures of acculturation, such as English speaking ability, have found that acculturation increases physician utilization (Pang et al., 2003; Sproston et al., 2001). Thus, it is postulated that elder Chinese with longer residence in the US will be more familiar with utilizing the Western medical system.

Health beliefs and health behaviors are also included as predisposing characteristics in Andersen's model (Andersen & Newman, 1973). In this study the use of TCM is specified as a health behavior. Jenkins, Le, McPhee, Stewart, and The Ha (1996) and Sproston et al. (2001) did not find a relationship between traditional beliefs and physician utilization in a Vietnamese immigrant sample. Other authors found that utilization of TCM instead of WM is more common among Asian immigrants characterized by lower socioeconomic status (Hislop et al., 2003; Jang et al., 1998; Kim, Han, Kim, & Duong, 2002; Ma, 1999). Given the conflicting findings from previous research, null and alternative hypotheses are presented. It is expected that elders in Boston who utilize TCM will be less likely than Chinese elders who do not utilize TCM to visit Western physicians.

Alternatively, TCM may not be a significant predictor of Western physician visits in the Boston sample. However, in the Shanghai sample it is expected that elders will utilize a bicultural system of care and that TCM will be positively associated with Western physician visits.

Enabling characteristics are the personal resources available to an individual that enable or impede the use of health services (Andersen & Newman, 1973). Several variables were specified as enabling resources. Researchers found that Asian immigrants on Medicaid or who lack health insurance are more likely than insured immigrants to utilize only Oriental medicine and less likely to have yearly medical screenings (Jang et al., 1998; Kim et al., 2002; Ma, 1999; Ryu et al., 2002). Affordability, or lack of income, is another reason that older Chinese do not utilize Western physicians (Pang et al., 2003; Zhang & Verhoef, 2002). Social support, measured as the frequency of interaction with family and friends, was found to enable immigrant Chinese elders to access healthcare (Wu, Tran, & Khatutsky, 2005). For Chinese elders, family members assist with interpretation, transportation, and navigating the healthcare system (Pang et al., 2003; Wong et al., 2005). Older Chinese with limited family support rely on friends for healthcare information (Wong et al., 2006).

Need exists when an individual utilizes healthcare services based on their recognition of an illness (Noelker et al., 1998). Andersen (1968) and Aday and Andersen (1974) posit that for ethnic minorities "need" is a stronger predictor of healthcare utilization than it is for persons of Caucasian ancestry. Number of chronic conditions, self-rated health, and depression are the measures of need employed in this research. A study in Beijing found that elders who had

high levels of functional ability and minor chronic conditions were more likely to visit Chinese doctors over Western physicians (Foreman et al., 1998). In a US sample, Chinese elders were more likely to treat chronic conditions with Oriental medicine and acute with Western medicine (Zhang, & Verhoef, 2002). Depression has been associated with increased primary care and outpatient visits (Callahan, Hui, Nienaber, Musick, & Tierney, 1994; Menchetti, Cevenini, De Ronchi, Quartesan, & Berardi, 2006).

One outcome of the behavioral model is type of healthcare utilization (Andersen & Newman, 1973). In this study the number of visits to a Western physician per year is the dependent variable. Western style physician visits have been previously specified as an outcome in the Andersen model by researchers studying health services use by Chinese elders (Foreman et al., 1998).

In summary, this study examines utilization of Western physicians by elder Chinese in Shanghai and in Boston. Additionally, it is hypothesized that use of TCM will predict physician utilization in the Shanghai sample, but will not be related to utilization in the Boston sample.

Methods Sample design

The Chinese immigrant data were collected in the Greater Boston area. The Bostonian elders were all first-generation immigrants. Eleven percent of the Bostonian elders immigrated before age 30. Most (69%) immigrated after age 50. The non-random sample was recruited through several Chinese senior centers run by a Chinese services agency and a Chinese senior housing development in 2000. The research team approached staff at the organizations who agreed to distribute the questionnaires. Participants were given a cover letter stating the purpose of the study, the questionnaire, a consent form, and return envelopes. The study was approved by the Boston College Internal Review Board. The questionnaire and consent form were returned in separate sealed envelopes to the Center staff who then presented the respondents with a \$20.00 grocery gift card. The amount of the honorarium was meant to be large enough to thank respondents for spending time to share their information, yet small enough so not to be perceived as coercive. Self-administered questionnaires were given to 200 immigrant Chinese elders 60 years and older and returned by 177 for a response rate of 88.5%.

The questionnaire was written in Mandarin. The questionnaire was translated from English into Mandarin by the corresponding author, who is a bilingual and bicultural gerontologist. To assure cultural equivalence, the translation was also reviewed and evaluated by experts, two bilingual social workers who worked with Chinese elders in the Boston Chinese community. For a detailed description of instrumentation, see Wu, Tran, and Amjad (2004).

In 2003 a comparison study was conducted in Shanghai, China. A three-stage sampling method was employed. The first step was to select two districts in Shanghai, and the second step was to select two street committees from each of these two districts. The third step was to select two neighborhood committees from each street. Overall, a total of six neighborhood committees were selected. Each neighborhood is overseen by an administrative committee.

The committee maintains a housing registry for each home in the neighborhood. The housing registration is an official document that contains basic demographic characteristics for each resident. With the collaboration of the administrative committee at each neighborhood, the

corresponding author selected study subjects randomly from the housing registration based on their gender and educational level. In order to ensure some compatibility between the two samples, the sample selected in Shanghai had similar levels of education and similar gender distribution to the sample collected in Boston. Research assistants in Shanghai conducted in-person interviews. The interviewers obtained written consent before the interview. The study was approved by the West Virginia University Internal Review Board. A total of 420 subjects aged 60 and older completed an in-person interview in Shanghai. The response rate was 91 %.

The in-person interview was conducted in Mandarin. The corresponding author modified the Chinese questionnaire used in Boston. Some terms that are only applicable in the United States, such as HMO, Medicare, Medicaid, Supplemental Security Income, public housing, and Food Stamps, were dropped from the questionnaire used in China. In China, the questionnaire contained equivalent words, such as social medical insurance and government subsidies that are used in China. The translated version was reviewed and evaluated by Chinese colleagues at the Shanghai University Sociology Department. The questionnaire was further evaluated by sociology students, who were the interviewers, during the interview training.

Measures

Predisposing characteristics

Education was coded on a scale of 1–6, where 1 indicated that a respondent did not have any formal education; 2 indicated elementary school; 3 indicated junior high school; 4 indicated high school; 5 indicated finishing technical school; and 6 indicated other higher education such as community college, college, or graduate education. Respondents were coded 1 if they were married, 0 otherwise. Gender was coded 1 if female, 0 otherwise. Age was measured in years.

Traditional Chinese health behaviors

The use of TCM was assessed by three items measured on a yes/no scale. The items asked if the respondent used herbal medicine, diet therapy, and/ or home remedies. The items were summed and the scores for the entire sample ranged from 0 to 3 ($M = .67$, $S.D. = .69$). Fifty-five percent of the entire sample practiced TCM.

Need characteristics

Self-rated health was measured with one question. The question, “How would you rate your overall health?” ranged from 5 (poor) to 1 (excellent).

Depression was measured by the short version of the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). This 11-item instrument has been used intensively to measure depressive symptoms among elders, including Chinese elders and Chinese immigrant elders (Kleinman, 1977; Krause, Liang, & Gu, 1998; Marsella, 1987; Wu et al., 2004). The items, “did not feel like eating, felt depressed, felt everything I did was an effort, sleep was restless, felt lonely, people were un-friendly, felt sad, felt that people disliked me, and I could not get going,” ranged from 0 (none of the time) to 3 (all of the time). The remaining items, “I felt happy, and I enjoyed life” were reverse coded. The final scale ranged from 0 to 30 ($M = 6.23$, $S.D. = 4.58$). Coefficient alpha was .77 for the Shanghai sample and .68 for the Boston sample.

Chronic conditions were measured by summing 10 yes/no items. The question asked, “What health problems currently limit your activities?” Respondents could indicate arthritis, back/neck problems, bone fractures/joint injury, difficulty walking, lung disease/difficulty breathing, hearing loss, vision loss, heart disease, hypertension, or diabetes. The range was 0–10 ($M = 2.86$, $S.D. = 2.10$).

Enabling characteristics

Social network was measured with two items. The first asked, “How frequently do you see your children or other close relatives?”, and the second asked, “How frequently do you meet or talk with your friends?” Each question had seven response categories: 0 indicated that a person did not have friends or relatives; 1 indicated less than once a month; 2 was at least once a month; 3 was at least once every 2 weeks; 4 indicated at least once a week; 5 indicated 2–4 days a week; and 6 indicated that a respondent was with friends or relatives every day. The final item ranged from 1 to 12 ($M = 7.14$; $S.D. = 2.85$).

Income was measured in yuan for the Shanghai sample, and in dollars for the Boston sample. Yuan was measured in increments of 1000, with 1 measuring less than 1000 and 4 indicating earnings of 3000 or higher yuan a month. In 2004 one US dollar was equivalent to eight yuan. For the Boston sample, annual income was measured. Respondents with an income of less than \$10,000 were coded 1; those with income between \$10,001 and \$14,999 were coded 2; respondents with \$15,000 to \$19,999 were coded 3, respondents with \$20,000 to \$29,000 were coded 4, and those with \$30,000 or higher income a year were coded 5.

Both Shanghai and Boston sample respondents were coded uninsured if they did not have private insurance, Medicare, Medicaid, or other employer or government sponsored health insurance. The respondents were asked, “Do you have any type of health insurance? If yes, what type of health insurance?” Respondents who reported they did not have any health insurance were coded no or uninsured. A never-worked spouse of a retired employee would be considered uninsured in the Shanghai sample.

Length of stay in the US was measured by the number of years of residence and was included only for the Boston sample.

Outcome

The dependent variable, visiting a Western physician, was measured by one question which asked, “How many times have you visited a doctor in the last 12 months?” It is convention in Mandarin to use the word “physician” or “doctor” to refer to western physicians, and “traditional Chinese doctor” to refer to individuals who practice TCM. Individuals who visit “physicians” instead of traditional Chinese doctors are doing so to obtain western medical practices. Thus, survey questions distinguished between western physicians and traditional Chinese doctors. The responses ranged from 0 to 5 ($M = 3.06$; $S.D. = 1.88$).

Respondent characteristics

Table 1 includes descriptive sample characteristics.

Procedures

The first step was to determine how many elder Chinese did not visit a physician. Only 98 elder Chinese (80 in China, and 18 in Boston) had not visited a physician in a year's time period. The number of non-users was not large enough to conduct a logic model predicting users and non-users. Estimates would be unreliable, particularly in the Boston sample. Since the number of physician visits per year was measured on an interval level, multiple regression analysis was used to test the proposed model. Multiple regression analysis is often used in non-experimental samples to study the simultaneous effects of several independent variables on an interval level dependent variable (Lewis-Beck, 1980).

Table 1

Sample characteristics and comparison of model variables in Boston and Shanghai samples

Variable	Boston (<i>N</i> = 177)	Shanghai (<i>N</i> = 420)	<i>T</i> -test/Chi-square test
Predisposing characteristics			
Female (%)	62.1	59.3	0.410
Age (mean)	71.81 (7.19)	69.67 (6.75)	3.472*
Education (mean)	3.59 (1.46)	3.40 (1.48)	1.442
Married (%)	52.5	73.6	25.280*
Chinese medicine (mean)	.64 (.73)	.68 (.67)	0.467
Years in the US ^a (mean)	18.36 (14.31)		
Enabling characteristics			
Social network (mean)	6.76 (2.26)	7.31 (3.05)	-2.156**
Income ^b (mean)	1.79 (1.26)	2.00 (.73)	
Uninsured (%)	16.4	9.4	6.139*
Need characteristics			
Self-rated health (mean)	3.21 (.97)	3.82 (.75)	-8.305*
Depression (mean)	5.43 (4.34)	6.24 (4.50)	-2.033**
Chronic conditions (mean)	2.12 (1.89)	3.17 (2.10)	-5.776*
Outcome			
Physician visits (mean)	2.53 (1.47)	3.28 (2.00)	5.019*

Note: Standard deviations in parentheses.

** $p < .01$, ** $p < .05$.*

a: Not applicable for the Shanghai sample.

b: Measured in yuan for the Shanghai sample, and in dollars for the US sample.

The variables that were included in the regression were chosen for two different reasons. First, the specification of the model was based on theoretical considerations; the variables had been found to be significant predictors by other researchers. Second, the two models had to be as similar as possible for comparison purposes; the variables included in the model had a significant relationship with the dependent variable in at least one of the

samples. The demographic variables were included (education, income, sex) as control variables in order to offer a fuller explanation of the variability found in the dependent variable (Lewis-Beck, 1980). Since number of years in the United States applied only to the Boston sample, and since income was measured differently for each sample, the decision was made to conduct two separate multiple regression models to predict physician utilization in the Boston and Shanghai sample.

Tabachnick and Fidell (2007) suggest a formula for determining the number of predictors in a regression model. They recommend that N should be equal to or greater than $50 + 8m$, where m is the number of independent variables. This criterion is met in the Boston sample, and more than satisfied with the Shanghai sample of 406 elders.

Results

Preliminary analyses were conducted to determine which of the model variables had a significant association with physician utilization. The results are found in Table 2. Bivariate correlations were conducted for the interval level variables, and Chi-square tests were conducted for the nominal variables. Independent variables with more than one response category were treated as interval. The measures of association revealed that for the Boston sample, depression, chronic conditions, health status, age, and social network were all positively associated with physician utilization, whereas being uninsured was negatively associated with physician utilization. For the Shanghai sample, use of Chinese medicine, depression, chronic conditions, health status, and being married were positively associated with physician utilization.

Table 2

Measures of association between western physician utilization and the model variables for the Boston and Shanghai sample

Variables	<u>Boston sample</u>		<u>Shanghai sample</u>	
	Pearson correlation/Chi-square	Sig.	Pearson correlation/Chi-square	Sig.
Predisposing characteristics				
Female ^a	6.68	.246	8.52	.130
Age	.242	.001	-.003	.953
Education	.078	.305	-.038	.436
Married ^a	9.33	.097	8.15	.148
Chinese medicine	.053	.492	.245	.000
Years in the US	-.127	.091		
Enabling characteristics				
Social network	.154	.041	-.026	.595
Income	-.093	.221	-.005	.913
Uninsured ^a	21.99	.001	8.630	.125
Need characteristics				
Health status	.377	.000	.292	.000
Depression	.246	.001	.177	.000
Chronic conditions	.304	.000	.273	.000

N = 177 for the Boston sample; *N* = 420 for the Shanghai sample.
a Chi-square statistics are reported for the dichotomous variables. The degrees of freedom were 5 for both samples.

We conducted two separate multiple regression analyses predicting physician utilization for each sample (see Table 3). The regression analysis explained 29% of the variance in physician utilization for the Boston sample. Significant predictors were being uninsured, health status, and social network. Older adults who reported larger social networks and poorer health had higher levels of physician utilization. Older adults without health insurance had lower levels of physician utilization than those with insurance. The multiple regression analysis for the Shanghai sample explained 18% of the variance in physician utilization. Use of TCM, number of chronic conditions, poorer health status, depression, and being married were associated with higher levels of physician utilization. For both samples, a regression analysis (not shown) testing for tolerance was conducted. Multicollinearity was not detected.

Table 3
 Factors affecting number of physician visits in both samples

Variables	Boston sample			Shanghai Sample		
	Beta	S.E.	Sig.	Beta	S.E.	Sig.
Constant ^a	-2.363	1.394	.092	-.504	1.325	.704
Predisposing characteristics						
Female	.024	.228	.755	.084	.200	.090
Age	.147	.017	.083	.011	.015	.826
Education	.080	.070	.256	.029	.072	.584
Married	.103	.230	.189	.160	.253	.004
Chinese medicine	-.048	.140	.485	.202	.140	.000
Years in the US	-.094	.009	.261	-		
Enabling characteristics						
Social network	.219	.044	.002	-.023	.032	.638
Income	.041	.093	.609	-.059	.162	.321
Uninsured	-.265	.308	.001	-.016	.337	.736
Need characteristics						
Health status	.249	.124	.003	.185	.134	.000
Depression	.114	.027	.158	.099	.023	.050
Chronic conditions	.131	.066	.124	.176	.049	.000

For the Boston sample, N = 169; *Adj. R*² = .286.
For the Shanghai sample, N = 406; *Adj. R*² = .174.
a: Unstandardized coefficient

Discussion

This study focused on Western physician utilization by Chinese elders. The study examined Chinese elders who reside in Boston and Chinese elders who reside in Shanghai. It was hypothesized that the predictors of physician utilization would differ for each sample.

For the Boston sample, the results are consistent with the Andersen (1968) model which theorizes that the framework for predicting physician utilization are the enabling and need characteristics of the individual. Two enabling characteristics, being uninsured and having a social network were associated with physician utilization. Poor health, a measure of need, was also associated with physician utilization. These findings are similar to Sproston et al. (2001) who studied a Chinese sample in England. They found that visiting a traditional Chinese doctor did not predict using a Western physician; however, poor health was a predictor.

Previous authors have identified several barriers that immigrant Chinese elders face to utilizing Western physicians (Ma, 2000). The increased utilization of Western physicians for elders who have large social networks indicates that family and friends link elders to the healthcare network. Studies have found that informal networks, particularly family networks, play an important role in assisting immigrant Chinese elders make healthcare decisions (Arion, Wu, & Tran, 2005). Chinese immigrant elders may need to rely on family members and friends for assessment of their health status, encouragement to visit a physician, navigating the US healthcare system, assistance with understanding and processing paperwork, translation services and for transportation to physician's offices.

Another barrier to accessing care is lack of health insurance for Chinese elders who reside in Boston. Other researchers have found that Chinese elders who qualify for Medicaid and Supplemental Security Income do not apply for these programs because they are unaware that they qualify or they are unable to complete the complex paperwork (Panget al., 2003). This indicates a need for outreach efforts and materials printed in Chinese. Identified need characteristics played an important role in predicting physician utilization in the Shanghai sample. Health status, number of chronic conditions, and depression were associated with increased physician utilization. In addition, enabling characteristics such as marital status was also associated with increased physician utilization.

The percentage of elders in both samples who used TCM did not differ. However, the regressions revealed use of TCM only predicted physician utilization for the Shanghai sample. Thus, even though it was anticipated that elders in Boston who utilized TCM would not be as likely as elders who did not utilize TCM to visit Western physicians, the hypothesis appears to be incorrect. It is quite possible that a significant relationship was not found due to the model controlling for socio-demographic characteristics. It may be that immigrants characterized by lower socioeconomic status utilize TCM because they do not have health insurance and cannot afford the out-of-pocket costs associated with visiting Western physicians in the United States.

It is more acceptable to utilize both TCM and Western physicians in China than in the US, which may be why Shanghai elders can combine TCM and Western medical practices. As indicated earlier, almost all physicians in China have had some level of training in TCM, and therefore, physicians are more comfortable with their patients practicing TCM. Conversely, most physicians in the US are not familiar with TCM and to a large extent, discourage their patients from alternative medicine. Green, Bradby, Chang, and Lee (2006) note that Chinese elders in the US are reluctant to tell their Western physicians that they utilize TCM. Given that the healthcare system in the US does not embrace alternative practices, elder immigrant Chinese who believe in the superiority of TCM

over Western medicine may be reluctant to utilize Western physicians. The sample was sufficiently large to control for a number of factors that influence physician utilization, and it may be that for an immigrant population, factors that enable them to utilize care are the most crucial predictors of actual utilization.

Another difference between the Boston and Shanghai sample was that social networks and marital status predicted utilization, respectively. Most elders in the Boston sample were married to a first-generation immigrant. It is highly probable that their spouse would have similar difficulty with communication in English, and in understanding and accessing the healthcare system. Thus, friends and younger family members who can assist in navigating the healthcare system increase an elder's likelihood of utilization. Other researchers (Ryuet al., 2002) have found that being married and family size is associated with Western physician utilization among Chinese immigrants.

More measures of identified need were significant predictors of physician utilization for the Shanghai than the Boston sample. In both samples, poor self-rated health was associated with increased physician utilization. In the Shanghai sample only, chronic conditions were also associated with increased physician utilization. Elder Chinese immigrants may be delaying preventive healthcare and only accessing the healthcare system when faced with acute conditions.

Except for marital status and TCM in the Shanghai sample, none of the other predisposing characteristics were significant in the regression analysis. Andersen and Newman (1973, p. 109) state "Like the other predisposing variables, health beliefs are not considered to be a direct reason for using services but do result in differences in inclination toward use of health services." Based on this statement it is not surprising that most of the demographic characteristics were not significant in the model. The significance of TCM in the Shanghai sample may also be indicative of the medical system in China.

Limitations

As in any cross-sectional study, interpretations of causality must be made with caution (Kenny, 1979). The findings are limited by the cross-sectional nature of the data. Under optimal circumstances, data would be collected on an immigrant sample prior to and after immigration. However, the inherent difficulty of designing cross-national studies and predicting future immigrants makes such studies prohibitive. Likewise, the sampling methods differed between Boston and Shanghai. Attempts to locate Chinese elders by random sampling in Boston are inefficient.

The sample in China is limited to urban residents. The results could be very different given the different structure of health care system and healthcare delivery system between urban and rural areas of China. In the Boston sample, the findings are limited by the voluntary nature of the sample, and the inherent bias associated with self-selection. Because the sample is non-random, generalizability of findings from these analyses is limited by the characteristics of the participants. Given the study only focused on Chinese elders, future work should be conducted to examine other immigrant groups to validate the substantive findings and explore differences. Future work should focus on variation between Asian cultural groups to validate the substantive findings and explore differences.

The study is further limited by the data collection procedures. It is possible that bias was introduced since the sample in Shanghai was collected face-to-face, and the sample in Boston completed self-administered questionnaires. In particular, it may be that elders in Boston with limited education failed to participate in the survey. It is important to note that the non-response rate was comparable in both samples; 88% in Boston and 91% in Shanghai. Boston elders who had difficulty completing the questionnaire were encouraged to consult with staff at the Chinese service agency, their family members, their Chinese neighbors, and friends. The sample in Shanghai was in part selected by educational level in order to ensure that the two samples would be comparable. Finally, the rate of illiteracy is quite low among Chinese immigrants. Based on Census data, only 10.5% of Chinese immigrants aged 25–64 have less than a high school education (Camarota, 2005). Although no data are available for Chinese immigrant elders aged 60 and above, it is likely the illiteracy rate is very low.

If collection bias is an issue the effect is probably modest. For individuals who are not proficient in English, family, and adult children in particular, rather than education, play a key role in the elders' health care decision (Pang et al., 2003; Wong et al., 2006).

Another limitation of this study is the lack of measures for acute and/or life-threatening conditions. Previous research has suggested that elder Chinese utilize Western physicians when faced with acute conditions. Future research should compare use of TCM and Western physicians based on the chronic and acute health conditions of the Chinese patients. The low R^2 may be in part due to unspecified factors that were not available in this study, such as acute conditions and factors that capture the political and ideological context of the healthcare system.

From a conceptual standpoint, additional variables measuring the multidimensional characteristics of acculturation should have been explored in the model. Under optimal circumstances, an acculturation scale measuring the different dimensions of acculturation would be employed. Unfortunately, other measures of acculturation were not available in the survey. However, a multiple regression model (not shown) which included a measure of English ability was analyzed. Unlike other studies (Pang et al., 2003; Sproston et al., 2001) familiarity with English was not a significant predictor of physician utilization and did not alter the significant relationships in the model. It may largely be due to the fact that many ethnic Chinese healthcare professionals are available in Boston and therefore, language barriers may not be an issue in accessing healthcare. Due to the moderate size of the Boston sample, the decision was made to exclude familiarity with English from the model.

Nevertheless, these findings have important implications for healthcare practitioners. These analyses show that Chinese elders rely on family members and friends for accessing healthcare. Outreach efforts targeted towards increasing awareness of available services and assisting elders in applying for Medicaid may serve to increase healthcare utilization. Chinese elders utilize both traditional Chinese medical treatments and Western physicians. This indicates that Western physicians should be aware of potential interaction effects that may occur between prescription medications and herbal supplements. Physicians should also be aware of cultural beliefs that may dictate non-compliance with Western medicine. In a survey of attitudes towards Western healthcare, Ngo-Metzger et al. (2004) found that Asian Americans were more likely than whites to feel that their doctor did not understand their

cultural values. This requires considering alternative practices and working with the elder in developing culturally sensitive approaches to healthcare.

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