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Health Care Expenditures Among Asian American Subgroups

Jie Chen[1], Arturo Vargas-Bustamante[2], and Alexander N. Ortega[2]

Abstract

Using two nationally representative data sets, this study examined health care expenditure disparities between Caucasians and different Asian American subgroups. Multivariate analyses demonstrate that Asian Americans, as a group, have significantly lower total expenditures compared with Caucasians. Results also point to considerable heterogeneities in health care spending within Asian American subgroups. Findings suggest that language assistance programs would be effective in reducing disparities among Caucasians and Asian American subgroups with the exception of Indians and Filipinos, who tend to be more proficient in English. Results also indicate that citizenship and nativity were major factors associated with expenditure disparities. Socioeconomic status, however, could not explain expenditure disparities. Results also show that Asian Americans have lower physician and pharmaceutical costs but not emergency department or hospital expenditures. These findings suggest the need for culturally competent policies specific to Asian American subgroups and the necessity to encourage cost-effective treatments among Asian Americans.

Keywords

health care expenditures, Asian Americans, health disparity, language barrier, citizenship/nativity

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Introduction

The literature on health care expenditure disparities shows a significant gap in expenditures among Caucasians and other racial/ethnic groups (Cook & Manning, 2009; Institute of Medicine [IOM], 2003; McGuire, Alegria, Cook, Wells, & Zaslavsky, 2006; Vargas-Bustamante & Chen, 2012). Most of these studies, however, concentrate only on African Americans or Latinos (Chen, Fang, Vargas, Rizzo, & Ortega, 2010; Chen & Rizzo, 2008; Cook & Manning, 2009; IOM, 2003; McGuire et al., 2006; Vargas-Bustamante & Chen, 2012), and evidence on Asian Americans is rather limited. A recent U.S. Census Bureau report (U.S. Census Bureau, 2010) showed that Asians and Pacific Islanders were the fastest growing racial groups in the United States. The Census report also predicted that this population would increase to more than five times its current size, to 41 million (approximately 10% of the total U.S. population) by 2050 (U.S. Census Bureau, 2010). Among Asian Americans, Chinese, Asian Indians (Indians), and Filipinos are the three largest subgroups in the United States, comprising 22.5%, 18.9%, and 18.0% of the total Asian population, respectively (U.S. Census Bureau, 2009). Given this substantial growth of the Asian population in the United States, it is important to examine and analyze the characteristics and differences of Asian American subgroups in order to inform adequate policy mechanisms to reach these populations (Gee & Ponce, 2010). The IOM (2003) report, *Unequal Treatment*, underscored the importance of clarifying the factors contributing to the racial and ethnic disparities. It called for evidence of heterogeneity among Asian American subgroups and suggested that this evidence is important since "[Asian American subgroups]' health care may be complicated by linguistic and cultural differences, immigrant status, and other access-related issues."

Most national surveys do not provide information on specific Asian American subgroups, and only a few studies have focused on health care access and utilization disparities among Asian American subgroups (Barnes, Adams, & Powell-Griner, 2008; Gee & Ponce, 2010; Gee, Ro, Shariff-Marco, & Chae, 2009; Gee, Spencer, Chen, & Takeuchi, 2007; Gee, Walsemann, & Takeuchi, 2010; Yu, Alexander, Schwalberg, & Kogan, 2001; Yu, Huang, & Singh, 2004, 2010). Two recent studies have found significant heterogeneity among Asian American children in health care access using the National Health Interview Survey and the California Health Interview Survey (Yu et al., 2004, 2010). Both studies demonstrated evidence that Asian ethnicity and being foreign-born could lead to worse health care access and less health care utilization. Studies on health care access and utilization among Asian American adults were either based on summary statistics (Barnes et al., 2008) or addressed specific diseases (Bastani, Maxwell, Glenn, Kagawa-Singer, & Parada, 2005; Ma et al., 2007; Takeuchi et al., 2007; Taylor et al., 2008; Tu et al., 2006) or treatments (Ma et al., 2004; Ma et al., 2007; Tang, Shimizu, & Chen, 2009). These studies consistently showed that culturally and linguistically diverse backgrounds of Asian Americans were barriers for their health care access and utilization. Gee and Ponce (2010) reported that linguistic barriers and racial discrimination experiences were also associated with lower health status among Asian Americans.

New Contribution

To our knowledge, this is the first study to examine health care expenditure variation among Asian American ethnic subgroups using two nationally representative data sets. When compared with indicators of health care access and utilization, expenditure is an ideal measure because it "captures the differences in intensity of care, as well as it allows for a more finely grained quantification of disparities among those who are the most medically needy" (Cook & Manning, 2009, p. 1604). In this study, we examine differences in total health care expenditures among Caucasians compared with specific Asian American subgroups. We also examine health expenditures on different types of health care services, such as physician visits, hospital visits, prescription drugs, and emergency department (ED) visits, to assess whether Asian American subgroups have heterogeneous health care expenditure patterns.

Conceptual Framework

The conceptual framework of this study is the behavioral model developed by Andersen and Newman (1973) and Andersen (1995). According to this model, predisposing, enabling, and need factors determine health care utilization and spending. Predisposing factors include characteristics such as race/ethnicity, age, gender, marital status, education, language, and citizenship/immigration status. Enabling factors include health insurance coverage and other socioeconomic factors, such as family income, having a usual source of care, living in an urban area, and U.S. Census regions. Need factors reflect the respondents' clinical needs. We use this framework to guide our empirical model specification.

Hypotheses

The first hypothesis of our study is that substantial variation in health care expenditures exists between Caucasians and Asian American subgroups. Health care expenditure patterns may also vary among Asian American subgroups, given their different cultural backgrounds and political histories in the United States (Hamamoto & Torres, 1997).

Previous studies have shown that foreign-born individuals are less likely to spend on health care (Derose, Escarce, & Lurie, 2007; Goldman, Smith, & Sood, 2006; Ku, 2009a, 2009b; Mohanty et al., 2005; Okie, 2007). Thus, our second hypothesis is that U.S. citizenship/nativity status is one of the major factors associated with expenditure differences between Caucasians and Asian American subgroups. In addition, we also examine whether particular Asian American subgroups that had historically faced fewer entry barriers into the United States would benefit from less-pronounced disparities. For instance, when the Philippines became an overseas territory of the United States, its populace became U.S. nationals in the early 20th century. Unlike other Asian American subgroups, who did not benefit from immediate naturalization, Filipinos, as U.S. nationals, could have assimilated quickly, leading to accelerated health expenditure convergence with respect to the native population.

Limited English proficiency has been considered a major barrier for Asian Americans seeking access to the health care system (Gee et al., 2010; Tang et al., 2009; Taylor et al., 2008). Unlike Latinos who variably speak Spanish and/or English across their subgroups, each Asian American subgroup speaks a variety of languages that complicates the implementation of language-based policies. Thus, our third hypothesis is that limited English proficiency is a major factor associated with health care expenditure disparities among Caucasians and Asian American subgroups. However, the magnitude of this association would differ between subgroups. Since English is one of the official languages in India and the Philippines, language barriers should be the lowest for these two groups when compared with other Asian American subgroups.

Disparities in health care expenditures may reflect differences in demographic or socioeconomic status (SES) among the groups. Previous studies show that fewer years of schooling or relative economic disadvantages among African Americans and Latinos are major factors associated with their worse health care access or lower health care expenditures (Chen et al., 2010; Chen & Rizzo, 2010; Vargas-Bustamante & Chen, 2012). Asian Americans, however, have relatively higher SES indicators comparable to those of Caucasians. Thus, we hypothesize that differences in SES among Caucasians and Asian American subgroups might not be sufficient enough to explain health care expenditure disparities between these two groups.

Method

Data

The data are from the 2002-2008 Medical Expenditure Panel Survey (MEPS) conducted by the Agency for Healthcare Research and Quality (2008). MEPS is a nationally representative survey of the civilian, noninstitutionalized population in the United States, with oversampling of racial and ethnic minorities to produce reliable subgroup estimates. It provides respondents' detailed health spending during the survey year, as well as their demographics, socioeconomic characteristics, health, and health insurance status. We pooled these 8 years of data to increase the sample size of the Asian American subgroups, and hence improve the precisions of our estimates.

To obtain the respondents' specific Asian American subethnicity and nativity/citizenship status, we linked MEPS to the National Health Interview Survey (NHIS; National Center for Health Statistics, 2008) for each survey year. NHIS provides specific Asian subgroup identification (Chinese, Indian, Filipino, and other Asians [OAs]). By merging these two data sets, we were able to examine the differences in total health care expenditures and expenditures on physician visits, hospital visits, pharmaceuticals, and ED visits among Caucasians and each Asian American subgroup. The final sample included 619 Chinese, 624 Asian Indian, 635 Filipino, 1,055 OA, and 36,557 Caucasian adults aged between 18 and 64 years. Among these respondents, 320 Chinese, 285 Indians, 319 Filipinos, 502 OAs, and 21,168 Caucasians provided responses at two different time points over a 2-year study period, given MEPS repeated-sampling design (Agency for Healthcare Research and Quality, 2008).

Measures

Dependent Variables. Our outcome variables are aggregated direct payments for health care services during the year, which include patients' out-of-pocket payment and the payments from third parties (i.e., private health insurance, Medicaid, Medicare, and other sources) during the survey year. These payment data were collected from MEPS household and medical provider components. These outcome variables were constructed following the previous literature (Cook & Manning, 2009; Ku, 2009a, 2009b; Mohanty et al., 2005). The first set of measures included dichotomous variables indicating the probability of reporting any health care expenditure and any expenditure on physician visits, hospital visits, prescription drugs, or ED visits. Among those who reported any type of health expenditure, the second set of measures included the specific amount of total and different types of health care expenditures (Manning, Bailit, Benjamin, & Newhouse, 1985; Manning & Mullahy, 2001). We used the natural logarithm of each health care expenditure measure to address the skewness in the distributions of the expenditure variables (Wooldridge, 1999, 2000). All health care expenditures were adjusted to constant dollars using the Medical Care Component of the Consumer Price Index, with 2008 as the base year.

Explanatory Variables. Predisposing factors in our model include respondents' race/ethnicity, age, sex, marital status, education, language, and citizenship/immigration status.

Language. According to Gee et al. (2010), language has two domains. The first is "the ability to communicate," which is called *English proficiency*. Poor English proficiency might "restrict employment opportunities, limit social interactions, increase experience with discrimination, and impede access to services" (Gee et al., 2010, p. 563). The second domain is called *language preference*, which reflects the respondent's cultural background and signals his or her way of "thinking and acting." Previous studies aggregated these two measures, but Gee et al. (2010) showed that these two measures were not always equivalent.

We measured these two domains separately and examined whether they were associated with health care expenditure disparities differently. We used two survey questions in MEPS and constructed three dichotomous variables: English was most often spoken at home (language preference); English was not most often spoken at home, but the respondent was comfortable speaking English (English proficiency); and English was not spoken at home, and the respondent was not comfortable speaking English (limited English proficiency).

Citizenship/nativity. NHIS data provide information on respondents' citizenship and nativity status. Using this information, we constructed the following three mutually exclusive dichotomous measures of citizenship and immigration: U.S.-born citizen, naturalized U.S. citizen, and non-U.S. citizen.

Need factors included respondents' self-reported health status, self-reported mental health status, a vector of indicators for chronic disease (diabetes, hyperlipidemia, hypertension, heart diseases, osteoarthritis, asthma, depressive disorder, and anxiety disorder; Cook & Manning, 2009). Enabling factors included respondents' family income, health insurance coverage, having usual source of care, living in an urban area, and U.S. Census region. The fixed effects for survey years were also controlled to adjust for any possible aggregate shocks, with 2002 as the reference year.

Analysis

We first summarized sample characteristics for each group and compared sample means using Caucasians as the reference group. *P* values were reported. We then implemented a cross-sectional study design to estimate the variation of health care expenditures among Asian American subgroups. To test our hypotheses, we used a two-part model to examine health care expenditures (Cragg, 1971; Goldberger, 1964). The first part of the model used a multivariate logistic regression to estimate the likelihood of having any health care expenditure. The second part estimated the multivariate linear regression model with the natural log of the amount of the health care expenditure as the outcome variable. Similarly, two-part models were applied to expenditures on different types of health services: physician visits, prescription drugs, hospital visits, and ED visits. These multivariate analyses controlled for race/ethnicity, English proficiency, citizenship and nativity status, and other demographic and socioeconomic factors presented in the previous section.

We then used the Blinder–Oaxaca decomposition techniques to determine the extent to which expenditure disparities reflected differences in observable population characteristics and to test the hypotheses that citizenship/nativity status and English proficiency were the main factors that explained health care expenditure disparities. The Blinder–Oaxaca approach is a regression-based method, and it has been used in the literature to analyze health expenditure disparities (Blinder, 1973; Chen & Rizzo, 2008; Jann, 2008; Jones, 2000; Oaxaca, 1973; Oaxaca & Ransom 1994; Vargas-Bustamante, Fang, Rizzo, & Ortega, 2009). For example, to examine disparities of total health care expenditures between Caucasians and Chinese, according to the decomposition method, we first ran multivariate regression models of health care expenditures for Caucasians and for Chinese. Then, we used the estimated coefficients to calculate the predicted expenditures for each group (Equations 1 and 2).

$$\ln(\overline{EXP}_W) = \bar{X}'_W \hat{\beta}_W, \tag{1}$$

$$\ln(\overline{EXP}_{CH}) = \bar{X}'_{CH} \hat{\beta}_{CH}, \tag{2}$$

where the Xs included all the covariates described in the previous section, and $\hat{\beta}$s were the coefficients associated with the Xs. Caucasians were the reference group. Subtracting Equation (2) from Equation (1), we obtained:

$$\ln(\overline{EXP}_W) - \ln(\overline{EXP}_{CH}) = (\bar{X}'_W - \bar{X}'_{CH})\hat{\beta}_W + \bar{X}'_{CH}(\hat{\beta}_W - \hat{\beta}_{CH}). \quad (3)$$

Blinder–Oaxaca decomposed differences in total health care expenditures were parsed out into two parts in Equation (3): the part due to all the observed independent variables across racial and ethnic groups (the first term on the right-hand side) and the part due to differences in the coefficients (unobserved factors) across racial and ethnic groups. The first part could be further disaggregated by each controlled individual characteristic, so we could estimate the contribution of a particular variable associated with health care expenditure disparities. The same approach was used in the analyses to examine health care expenditure disparities between Caucasians and other Asian American subgroups.

One feature of MEPS survey design is that some participants are repeatedly sampled in sequential survey years. Thus, we used nonparametric bootstrap procedures with 200 replications to get robust standard error for our estimated coefficients (Efron, 1979, 1982; Mooney & Duval, 1993) and decomposition results (Jann, 2008).

Results

Summary Statistics

Figure 1 summarizes the total and particular types of health care expenditures by Caucasians, Chinese, Indians, Filipinos, and OAs. Caucasians had the highest total expenditure when compared with the Asian American subgroups. Chinese and Indians had lower total expenditures when compared with Filipinos and OAs. Figure 1 also presents expenditure variation on different services. Chinese had the lowest pharmaceutical cost, only equivalent to 25% and 50% of those of Caucasians and Filipinos, respectively. However, Chinese had the highest cost on physician visits when compared with those of other Asian American subgroups. Indians and OAs had the highest hospital expenditures when compared with those of Chinese and Filipinos. Filipinos had the highest ED expenditure when compared with those of other Asian American subgroups.

Table 1 presents sample characteristics by Asian American subgroups. Compared with Caucasians, Asians were less likely to have any health expenditure. Among Asians Americans, Chinese and OAs were the least likely to have any hospital or pharmaceutical expenditure compared with Caucasians. Chinese were also less likely to have any ED cost compared with Caucasians. Compared with Caucasians, Asians had 37% lower total expenditures on average. Among Asian Americans, Chinese had the highest expenditure on physician visits and the lowest expenditure on pharmaceuticals.

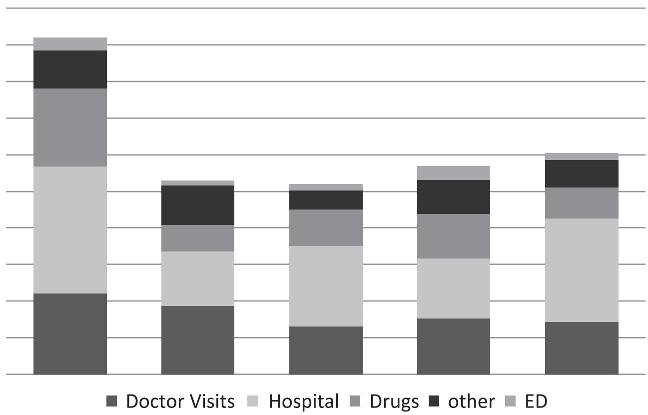

Figure 1. Total and different types of health care expenditures ($) by Asian American subgroups.
Note: Data: Medical Expenditure Panel Survey and National Health Interview Survey 2002-2008, adults aged between 18 and 64 years. Other expenditures included expenditures on dental care, vision care, and so on. ED = emergency-department visits.

Filipinos had the highest pharmaceutical and ED expenditures, and OAs had the highest hospital expenditure.

Approximately half of Chinese, Indians, and OAs did not speak English most often at home, but almost all Indians and Filipinos were comfortable speaking English. Approximately 21% to 29% of Chinese, Filipinos, and OAs were U.S.-born citizens, but only 8% of Indians were U.S.-born. Almost half of Indians were non-U.S. citizens, while only 23% of Filipinos were non-U.S. citizens.

Indians were relatively younger than Caucasians (average age 39 vs. 43 years). The proportion of females was the highest among Filipinos, followed by Caucasians, Chinese, OAs, and Indians. Asians were also more likely to be married and less likely to report poor/fair health status. Asian Americans reported fewer rates of chronic diseases, especially the depressive or anxiety disorders. Filipinos, however, had significantly higher rates of diabetes, hyperlipidemia, and hypertension when compared with Caucasians. The proportion of respondents with a college degree or advanced degrees was the highest among Indians (70%) followed by Chinese (60%), Filipinos (58%), OAs (43%), and Caucasians (36%). Chinese, Indian, and Filipino respondents were also less likely to have family incomes under 100% of federal poverty line than Caucasians. They were also less likely to be uninsured or covered by public health insurance when compared with Caucasians.

Table 2 presents the results of multivariate regression controlling for all independent variables described above. Part I presents the results of the probability of having

Table 1. Summary Statistics of Sample Characteristics by Ethnicity.

	Caucasians	Chinese		Indians		Filipinos		Other Asians	
	Mean	Mean	*p*	Mean	*p*	Mean	*p*	Mean	*p*
Dependent Variables									
The probability of having any expenditure									
Any total health care expenditure	0.94	0.91	***	0.92		0.92	*	0.88	***
Any expenditure of Rx	0.79	0.64	***	0.70	***	0.73	***	0.63	***
Any expenditure of Dr visit	0.82	0.78	***	0.77	***	0.77	***	0.72	***
Any expenditure of hospital visit	0.27	0.15	***	0.18	***	0.19	***	0.13	***
Any expenditure of ED	0.15	0.06	***	0.08	***	0.10	***	0.08	***
The amount of expenditure if there was any									
Total expenditure	4910.68	2913.23	***	2818.56	***	3095.74	***	3444.01	***
RX expenditure	1354.93	571.00	***	724.25	***	833.03	***	669.30	***
Physician expenditure	1348.97	1194.04		856.84	***	990.51	**	990.83	***
Hospital expenditure	6476.89	4855.43		5998.30		4395.44		10772.69	***
ED expenditure	1208.37	1113.70		1058.89		1975.50	***	1271.07	
Independent Variables									
Predisposing factors									
Age (years)			***		***				***
18-24	0.12	0.12		0.09		0.09		0.12	
25-34	0.18	0.22		0.32		0.20		0.22	
35-44	0.23	0.20		0.27		0.27		0.25	
45-54	0.26	0.28		0.20		0.22		0.24	
55-64	0.22	0.17		0.12		0.23		0.18	
Female	0.55	0.54		0.47	***	0.60	***	0.54	***
Married	0.59	0.66	***	0.77	***	0.66	***	0.64	
Education			***		***		***		***
No high school degree	0.16	0.12		0.09		0.07		0.21	
High school degree	0.47	0.27		0.21		0.35		0.34	
College degree	0.18	0.27		0.31		0.40		0.26	
Advanced degree	0.18	0.33		0.39		0.18		0.17	
English proficiency			***		***		***		***
Language preference	0.98	0.48		0.50		0.73		0.49	
English proficiency	0.01	0.40		0.47		0.27		0.35	
Limited English proficiency	0.00	0.12		0.03		0.00		0.17	
Citizenship/nativity			***		***		***		***
U.S. born	0.96	0.22		0.08		0.29		0.21	
U.S. naturalized	0.02	0.47		0.40		0.48		0.45	
Noncitizen	0.02	0.31		0.51		0.23		0.35	
Need factors									
Self-reported health			*		***		***		
Excellent	0.24	0.22		0.29		0.25		0.23	
Very good	0.35	0.37		0.34		0.36		0.32	
Good	0.28	0.33		0.30		0.30		0.33	
Fair	0.10	0.06		0.05		0.07		0.09	
Poor	0.04	0.01		0.03		0.02		0.03	
Self-reported mental health			**		***		***		
Excellent	0.35	0.35		0.49		0.44		0.33	
Very good	0.31	0.35		0.29		0.32		0.30	
Good	0.25	0.26		0.19		0.19		0.29	
Fair	0.07	0.03		0.03		0.04		0.06	
Poor	0.02	0.01		0.01		0.01		0.02	

(continued)

Table 1. (continued)

	Caucasians	Chinese		Indians		Filipinos		Other Asians	
	Mean	Mean	*p*	Mean	*p*	Mean	*p*	Mean	*p*
Chronic diseases indicators									
Diabetes	0.06	0.05	*	0.08		0.11	***	0.05	
Hyperlipidemia	0.14	0.12		0.15		0.18	**	0.11	**
Hypertension	0.18	0.12	***	0.13	***	0.26	***	0.13	***
Heart diseases	0.02	0.01	**	0.01	**	0.01	**	0.01	***
Osteoarthritis	0.03	0.02		0.01	*	0.03		0.02	**
Asthma	0.06	0.02	***	0.03	**	0.05		0.03	***
Depressive disorder	0.13	0.03	***	0.04	***	0.05	***	0.06	***
Anxiety disorder	0.09	0.01	***	0.01	***	0.04	***	0.03	***
Enabling factors									
Family income			***		***		***		***
Less than 100% FPL	0.10	0.06		0.06		0.04		0.12	
100% to 200% FPL	0.14	0.11		0.11		0.09		0.19	
More than 200% FPL	0.76	0.82		0.83		0.87		0.69	
Having usual source of care	0.82	0.78	***	0.78	***	0.83		0.73	***
Health insurance			***		**		***		***
Uninsured	0.12	0.09		0.11		0.07		0.14	
Public health insurance	0.10	0.05		0.05		0.04		0.14	
Private health insurance	0.79	0.86		0.84		0.89		0.72	
Location			***		***		***		***
Urban	0.76	0.98		0.97		0.95		0.96	
U.S. region			***		*		***		***
Northeast	0.17	0.22		0.29		0.10		0.13	
Midwest	0.28	0.09		0.18		0.07		0.09	
South	0.35	0.20		0.26		0.15		0.23	
West	0.20	0.50		0.27		0.68		0.54	

Note: ED = emergency department; FPL = federal poverty level. Data: Medical Expenditure Panel Survey and National Health Interview Survey 2002-2008, adults aged 18 to 64 years. *T* tests were conducted to compare the sample means using Caucasians as the reference group.
*p < .05. **p < .01. ***p < .001.

any health spending, and Part II presents the results of the amount of the health care expenditures if there were any.

In the regression models that estimated the likelihood of reporting any health expenditure (Part I), Filipinos and OAs were significantly less likely to have any health spending when compared with Caucasians. They were also less likely to have any expenditure on physician visits. Chinese, Filipinos, and OAs were significantly less likely to have any pharmaceutical cost, compared with Caucasians. Chinese, Indians, and OAs were significantly less likely to have any ED costs.

Conditional on having any health care expenditure, all Asian Americans had significantly lower total health care expenditures and pharmaceutical expenditures, compared with Caucasians (Part II). Indians, Filipinos, and OAs spent significantly less on physician visits compared with Caucasians. Among the Asian American subgroups,

Table 2. Multivariate Regression Results (Two-Part Models).

Part I: The Probability of Having Any Expenditure										
	Total		Rx		Physician		Hospital		ED	
	OR	*p*	OR	*p*	OR	*p*	OR	*p*	OR	*p*
Caucasians	Reference		Reference		Reference		Reference		Reference	
Chinese	0.75		0.62	***	0.89		0.80		0.58	***
Indians	0.89		0.87		0.82		0.85		0.72	*
Filipinos	0.62	***	0.70	***	0.59	***	0.89		0.95	
Other Asians	0.74	*	0.62	***	0.75	**	0.69	***	0.71	**
Part II: The Amount of Expenditure if There Was Any										
	Total		Rx		Physician		Hospital		ED	
	Coeff.	*p*	Coeff.	*p*	Coeff.	*p*	Coeff.	*p*	Coeff.	*p*
Caucasians	Reference		Reference		Reference		Reference		Reference	
Chinese	−0.17	**	−0.31	***	−0.05		−0.26		−0.08	
Indians	−0.32	***	−0.23	***	−0.22	***	−0.11		−0.15	
Filipinos	−0.28	***	−0.27	***	−0.22	***	−0.32	*	0.1	
Other Asians	−0.28	***	−0.2	***	−0.17	**	−0.17		0.01	

Notes: ED = emergency department; OR = odds ratio. Data: Medical Expenditure Panel Survey and National Health Interview Survey 2002-2008, adults aged between 18 and 64 years. All the regressions controlled the independent variables presented in the conceptual model. Their coefficients were omitted for brevity but are available on request
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

only Filipinos had significantly lower hospital expenditure compared with Caucasians. There were also no significant differences existed on ED expenditure among Caucasians and each Asian subgroup.

Decomposition Results

Table 3 presents the decomposition estimates comparing Caucasians with each Asian American subgroup. All the decomposition models included the same covariates as the multivariate models. For brevity, our decomposition results only listed the explanatory variables that explained 5% or higher of the total differences.

The predicted natural log of total health care expenditure for Caucasians (the reference group), Chinese, Indians, Filipinos, and OAs were 7.45, 6.98, 6.82, 7.12, and 6.82, respectively. The observed population characteristics explained 56.03% (= −0.27/−0.48), 44.57% (= −0.28/−0.64), and 48.21% (= −0.31/−0.63) of disparities between Caucasians and Chinese, Indians and OAs, respectively. Unobserved

Table 3. Decomposition of Natural Log of Total Health Care Expenditures.

	Caucasian (reference)	Chinese	Indians	Other Asians	Filipinos
Predicted natural log of health care expenditures	7.45	6.98	6.82	6.82	7.12
Total difference relative to Caucasian (in logs)	NA	–0.48	–0.64	–0.63	–0.34
Total explained difference relative to Caucasian (in logs)	NA	–0.27	–0.28	–0.31	–0.02 (NS)
Contribution of Individual Explanatory Factors (% of Explained Differences)[a]					
Age[b]		5.84%	19.09%	6.62%	
Female		—	10.70%	—	
Education		–16.87%	–24.55%	—	
Citizenship/nationality		17.09%	18.99%	17.18%	
Language preference		22.72%	26.25%	17.10%	
Limited English proficiency		13.91%	—	17.63%	
Self-reported health		13.49%	13.29%		
Hypertension		6.46%	5.88%	5.00%	
Depressive disorders		15.60%	14.79%	9.08%	
Anxiety		10.41%	10.00%	7.15%	
Having usual source of care		—	5.93%	9.10%	

Note: NA = not applicable; NS = not statistically significant. Differences in probabilities of having any health care cost are relatively small among Caucasians and Asian Americans, thus the decomposition is not meaningful for this outcome measure.
a. All decomposition models included the same covariates as the multivariate models in Table 2. For brevity, however, our decomposition results only show explanatory measures that explained differences of 5% or higher.
b. Among individual factors, positive/negative coefficients indicated the share of explanatory variables positively/negatively associated with explained health expenditure disparities. For example, age differences between Chinese and Caucasians explained 5.84% of the explained difference.

heterogeneity thus accounted for the remaining 43.97%, 55.43%, and 51.79% of these disparities. The observed characteristics did not explain differences between Caucasians and Filipinos. In other words, the disparities in health care expenditures among Caucasians and Filipinos were all explained by unobserved characteristics.

Among individual characteristics, respondents' nationalities/citizenship, language preference, and English proficiency contributed to 17.09%, 22.72%, and 13.91% of observed differences in health care expenditures among Caucasians versus Chinese. Thus, if there were no differences in these three characteristics among Caucasians and Chinese, observed disparities between these two groups would be significantly reduced by approximately 53.82%, if all the other factors remain fixed. Differences in self-reported health and rates in depressive disorder, anxiety disorder, and hypertension explained 13.49%, 15.60%, 10.41%, and 6.46% of these differences. On the other hand, education contributed negatively to differences between Caucasians and Chinese. In our sample, Chinese had relatively higher education achievement when compared with Caucasians (in Table 1). Respondents with higher education had higher total health care expenditure (results omitted in Table 2 for brevity). Therefore, if Chinese had lower education achievement, they would have even lower health care expenditure, compared with their current level, and eventually the disparity between Caucasians and Chinese would increase.

Differences in language preference, citizenship/nativity status, and age were the three major factors that contributed to health care expenditure differences between Caucasians and Indians, followed by self-reported health status, indicators of chronic diseases, proportions of females, and having usual source of care. Education was also negatively associated with health care expenditure differences between Caucasians and Indians. Citizenship/nativity status, language preference, and limited English proficiency were the top three factors associated with disparities between Caucasians and OAs, followed by having usual source of care, indicators of chronic diseases, and age.

Discussion

Our study showed that Asian Americans, as a group, had significantly lower total expenditures compared with Caucasians. Results also pointed to considerable heterogeneities in health care spending within Asian American subgroups. Our decomposition results showed that Asian Americans' citizenship/nativity status, language preference, and English proficiency were the major factors associated with these disparities.

Almost one third of Chinese and OAs and half of Indians were non-U.S. citizens in our sample. Non-U.S. citizens usually face more obstacles to enroll in public-sponsored health programs, and they are less likely to have access to health care services and report lower per capita medical expenditures (Ku, 2009a, 2009b; Mohanty et al., 2005). Our study showed that nativity/citizenship status explained 17% to 19% of the differences in health care expenditures among Caucasians versus Asian Americans, except for Filipinos. This finding could potentially relate to the former status of the Philippines as an overseas territory of the United States.

Followed by nationality, language preference and English proficiency also contributed to health expenditure disparities. Compared with Caucasians, half of Chinese and Indian families preferred speaking their native languages rather than English at home. Language preference has been considered an indicator of the respondent's cultural background (Gee et al., 2010). It is likely that English-speaking families are better assimilated and have a better understanding of the U.S. health care system. Thus, language preference can potentially capture some of the cultural differences among Caucasians and Asian Americans.

However, our results showed that limited English proficiency explained 14% to 18% of difference in health care expenditures between Caucasians, Chinese, and OAs. This finding is consistent with the existing evidence that individuals with language barriers reported worse access to care and lower health care expenditures (Derose & Baker, 2000; Fiscella, Franks, Doescher, & Saver, 2002; Flores, 2006; Jacobs, Chen, Karliner, Agger-Gupta, & Mutha, 2006; Jacobs, Karavolos, Rathouz, Ferris, & Powell, 2005; Ponce, Hays, & Cunningham, 2006; Taylor et al., 2008). Thus, improving English proficiency might substantially reduce health expenditure disparities among Caucasians and Chinese and OAs. However, since English is one of the official languages in India and the Philippines (Tagalog became the second official language of the Philippines recently; Gee et al., 2010), almost all the Indian and Filipino Americans are English-proficient. Thus, English proficiency does not explain differences in health expenditures among Caucasians, Indians, and Filipinos.

Previous studies have shown that African Americans' and Latinos' lower SES and limited access to care were major factors that explained their lower health expenditures when compared with Caucasians (Chen & Rizzo, 2010; Vargas-Bustamante & Chen, 2012). Differences in SES, however, were not major factors explaining differences between Caucasians and Asian Americans. For instance, previous studies showed evidence that expenditure disparities between Caucasians and Latinos would decrease by improving Latinos' education (Chen et al., 2010; Vargas-Bustamante & Chen, 2012). Asian Americans, on the other hand, had higher education than Caucasians (Table 1), which means that if Asian Americans had lower education, the spending disparities between Caucasians and Asian Americans would further increase (Table 3).

Our study also showed different health care expenditure patterns between Caucasians and Asian Americans. For example, Asian Americans had lower physician and pharmaceutical costs but not ED or hospital expenditures. These results suggested that it might be necessary to encourage Asian Americans to pursue cost-effective treatments, such as preventive visits and pharmaceutical use, hence reducing the expensive ED and hospital costs (Kaiser Family Foundation, 2010; Lichtenberg, 1996, 2001; Lichtenberg & Virabhak, 2007).

It is worth noting that unobserved characteristics explained more than half of differences in health care expenditures between Caucasians and Chinese, Indians, and OAs. Unobserved characteristics explaining health care expenditure differences could be physician–patient relationship (Ngo-Metzger et al., 2006), such as communication or trust, discrimination (Gee et al., 2009; Gee & Ponce, 2010; Karlsen & Nazroo, 2002; Nazroo, 2003; Spencer & Chen, 2004), uncontrolled disease, or illness severity (Gee et al., 2007; Gee & Ponce, 2010) between Caucasians and these Asian American subgroups.

Unobserved factors may reflect unmeasured preferences for different types of treatments by different ethnic groups as well. For example, a recent study compared complementary and alternative medicine (CAM) utilization between Caucasians and Asian Americans (Su & Li, 2011). Although the overall rates of different types of CAM utilization were comparable between these two groups, Asian Americans were more than twice as likely to use two particular CAMs: acupuncture and ayurveda. Acupuncture originated in China 2000 years ago. Ayurveda is a traditional treatment that originated in India. These findings might partly explain Chinese and Indians' lower utilization of prescription drugs and more likely use of CAMs (Su & Li, 2011). We did not have sufficient data to account for these preferences, and we were not able to further distinguish these unobserved heterogeneities.

Differences between Caucasians and Filipinos were almost all explained by unobserved characteristics. Among Asian subgroups, Filipinos have the longest immigration history to the United States. Filipinos' characteristics, such as language preference, English proficiency, immigrant proportions, health care access, as well as health care expenditures are the closest to those of Caucasians. Due to the similarity of these observed population characteristics, we were unable to explain the variation in health care expenditures between Caucasians and Filipinos.

Our results showed evidence that understanding the varying cultural backgrounds of Asian Americans is critical when tackling health care disparities between Caucasians and Asians. Future studies should focus on the uncontrolled variables in this study, such as Asian Americans' physician–patient relationship. The rest of the unexplained factors associated with disparities might reflect Asian Americans' cultural norms or actual preferences, which can be challenging to identify and control for empirically.

Our results should be interpreted with caution. First, the OA group is relatively heterogeneous. This group covers Japanese, Koreans, Vietnamese, and other Asian subgroups (Hamamoto & Torres, 1997). These subgroups were significantly different in terms of U.S. immigration history, English proficiency, education, family income, and other important factors. NHIS, however, merged these subgroups into a single category that is impossible to disaggregate. Second, MEPS interview languages were either English or Spanish and not in any Asian languages. Thus, the sampled Asians tended to be more educated and fluent in English, which might result in a possible underestimation of expenditure disparities. Third, the expenditure data were self-reported, which could be somewhat imprecise among some respondents. Fourth, although a number of predisposing, enabling, and need factors related to health care expenditures had been controlled, it is possible that some potentially important factors, such as the utilization of CAMs, might have been excluded due to data limitations. Finally, our study only examined health care expenditure disparities between Caucasians and Asian American subgroups. We had no evidence on whether the observed levels of spending or health care utilization were appropriate for these populations. For instance, higher spending among Caucasians could be due to overutilization of health care services.

Conclusions

This study showed considerable heterogeneities in health care expenditure patterns among Asian Americans, suggesting the need for targeted policies to better serve different Asian American subgroups. Results suggested that language assistance programs would be useful to reduce disparities between Caucasians and Chinese or OAs but not between Caucasians and Indians or Filipinos. Improving health care access would have relatively limited effects on reducing disparities between Caucasians and Asian Americans, compared with disparities between Caucasians and African Americans or Latinos that have been identified in other studies (Chen et al., 2010; Chen & Rizzo, 2010; Vargas-Bustamante & Chen, 2012). Results also found that citizenship/nativity status was the major factor associated with expenditure disparities for Asian American subgroups. These findings suggest the need for culturally competent policies for particular Asian American populations so that they can navigate the U.S. health care system more easily. Finally, results showed that Asian Americans had lower physician and pharmaceutical costs but not ED or hospital expenditures. These results suggested that it is necessary to encourage preventive care interventions among Asian Americans, such as physician visits and pharmaceutical use, to reduce less cost-effective ED and hospital utilization.

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